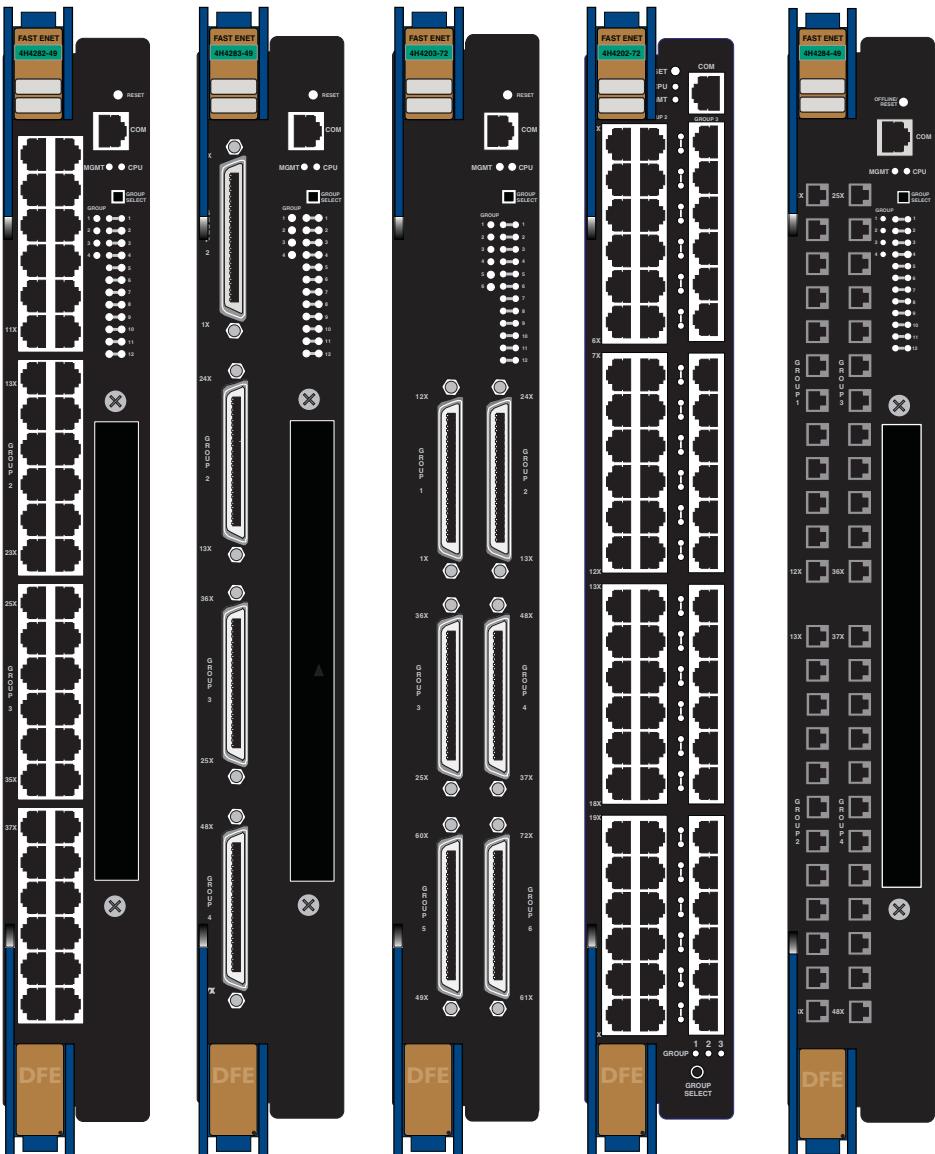


Matrix DFE-Gold Series Modules

(4H4282-49, 4H4283-49, 4H4203-72, 4H4202-72, 4H4284-49)

Installation Guide





Electrical Hazard: Only qualified personnel should perform installation procedures.

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NOTE: This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment uses, generates, and can radiate radio frequency energy and if not installed in accordance with the operator's manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference in which case the user will be required to correct the interference at his own expense.

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Electromagnetic Compatibility (EMC)

This product complies with the following: 47 CFR Parts 2 and 15, CSA C108.8, 89/336/EEC, EN 55022, EN 61000-3-2, EN 61000-3-3, EN 55024, AS/NZS CISPR 22, VCCI V-3.

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Este producto de Enterasys cumple con lo siguiente: 47 CFR Partes 2 y 15, CSA C108.8, 89/336/EEC, EN 55022, EN 55024, EN 61000-3-2, EN 61000-3-3, AS/NZS CISPR 22, VCCI V-3.

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Safety Information **Class 1 Laser Transceivers**

The single mode interface modules use Class 1 laser transceivers.
Read the following safety information before installing or operating these modules.

The Class 1 laser transceivers use an optical feedback loop to maintain Class 1 operation limits. This control loop eliminates the need for maintenance checks or adjustments. The output is factory set, and does not allow any user adjustment. Class 1 Laser transceivers comply with the following safety standards:

- 21 CFR 1040.10 and 1040.11 U.S. Department of Health and Human Services (FDA).
- IEC Publication 825 (International Electrotechnical Commission).
- CENELEC EN 60825 (European Committee for Electrotechnical Standardization).

When operating within their performance limitations, laser transceiver output meets the Class 1 accessible emission limit of all three standards. Class 1 levels of laser radiation are not considered hazardous.

When the connector is in place, all laser radiation remains within the fiber. The maximum amount of radiant power exiting the fiber (under normal conditions) is -12.6 dBm or 55×10^{-6} watts.

Removing the optical connector from the transceiver allows laser radiation to emit directly from the optical port. The maximum radiance from the optical port (under worst case conditions) is 0.8 W cm^{-2} or $8 \times 10^3 \text{ W m}^2 \text{ sr}^{-1}$.

Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, power must be removed from the network adapter.

Declaration of Conformity

Application of Council Directive(s): **89/336/EEC**
73/23/EEC

Manufacturer's Name: **Enterasys Networks, Inc.**

Manufacturer's Address: **50 Minuteman Road
Andover, MA 01810
USA**

European Representative Address: **Enterasys Networks, Ltd.
Nexus House, Newbury Business Park
London Road, Newbury
Berkshire RG14 2PZ, England**

Conformance to Directive(s)/Product Standards: **EC Directive 89/336/EEC
EN 55022
EN 55024
EC Directive 73/23/EEC
EN 60950
EN 60825**

Equipment Type/Environment: **Networking Equipment, for use in a Commercial or Light Industrial Environment.**

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About This Guide

This guide provides an overview, installation and troubleshooting instructions, and specifications for the Enterasys Matrix™ DFE-Gold 4H4282-49, 4H4283-49, 4H4203-72, 4H4202-72, 4H4284-49 (Distributed Forwarding Engine) modules, the 7G-6MGBIC (an optional Ethernet interface module), and the Mini-GBIC modules.

For information about the CLI (Command Line Interface) set of commands used to configure and manage the DFE-Gold modules, refer to the Enterasys Networks™ *Matrix DFE-Gold Series Configuration Guide*.



Note: In this guide, the following terms are used:

- *DFE-Gold module* refers to the 4H4282-49, 4H4283-49, 4H4203-72, 4H4202-72, and 4H4284-49. If the information applies only to one of the modules, the module is referred to by its model number (such as 4H4282-49).
- *Ethernet interface module* (or simply *interface module*) refers to an optional uplink card installed on the main logic board and accessible through the option slot of the 4H4282-49, 4H4283-49, or 4H4284-49.
- *Mini-GBIC* (Mini-Gigabit Interface Card) refers to a smaller optional interface card that plugs into the 7G-6MGBIC interface module.
- *7G-6MGBIC* refers to both the 7G-6MGBIC and 7G-6MGBIC-A interface modules unless otherwise noted.

Important Notice

Depending on the firmware version used in the DFE-Gold module, some features described in this document may not be supported. Refer to the Release Notes shipped with the DFE-Gold module to determine which features are supported.

Who Should Use This Guide



Electrical Hazard: Only qualified personnel should perform installation procedures.

Riesgo Electrico: Solamente personal calificado debe realizar procedimientos de instalacion.

Elektrischer Gefahrenhinweis: Installationen sollten nur durch ausgebildetes und qualifiziertes Personal vorgenommen werden.

This guide is intended for a network administrator responsible for installing and setting up the DFE modules.

Structure of This Guide

This guide is organized as follows:

This preface provides preliminary information to help you use this guide and a brief summary of each chapter, defines conventions used in this document, and lists technology and user guides that may help you set up and manage the DFE-Gold modules.

Chapter 1, **Introduction**, provides an overview of the DFE-Gold modules, and explains how to contact Enterasys Networks for technical support.

Chapter 2, **Network Requirements**, provides an overview of the network requirements that must be met before installing a DFE-Gold module.

Chapter 3, **Installation**, provides instructions on how to install the DFE-Gold module into a Matrix N3, Matrix N7, or Matrix E7 chassis, install an optional Ethernet interface module and Mini-GBICs, and connect segments to the DFE-Gold module and any of its installed options. Also included in this chapter are important guidelines that must be followed when installing DFE modules into a chassis.

Chapter 4, **Troubleshooting**, describes the function of the LANVIEW® LEDs and provides troubleshooting procedures to help diagnose switch operational and related network problems.

Appendix A, **Specifications**, contains information on port operating specifications, connector pinouts, environmental requirements, and physical properties of the DFE modules, optional 7G-6MGBIC Ethernet interface module, Mini-GBICs, and the media they support. Also provided are optical specifications and operating range for Mini-GBICs, and regulatory compliance information.

Appendix B, **Mode Switch Bank Settings and Optional Installations**, describes how to access the Mode Switch Bank and describes how to use its switches to clear NVRAM of all user-entered parameters and reset them to the factory default settings, or clear the user-entered passwords and reset them to the factory default settings. In either case, you can Reenter your user settings. Also included in this appendix are the removal and replacement procedures for the DIMM and DRAM SIMM memory modules.

How to Use This Guide

For...	Refer to...
An overview of the DFE-Gold modules and instructions to obtain technical support from Enterasys Networks	Chapter 1, Introduction
Network requirements that must be met before installing the DFE-Gold modules	Chapter 2, Network Requirements
Instructions to install the DFE-Gold module hardware and optional interface card	Chapter 3, Installation
Troubleshooting installation problems and diagnosing network/operational problems using the LANVIEW LEDs	Chapter 4, Troubleshooting
Specifications, environmental requirements, and physical properties of the DFE-Gold modules, the optional 7G-6MGBIC Ethernet interface module, and Mini-GBIC interface cards	Appendix A, Specifications
Instructions to set the mode switches when necessary and remove and replace DIMM and DRAM SIMM memory	Appendix B, Mode Switch Bank Settings and Optional Installations

Related Documents

The manuals listed below can be obtained from the World Wide Web in Adobe Acrobat Portable Document Format (PDF) at the following site:

<http://www.enterasys.com/support/manuals>

- *Matrix DFE-Gold Series Configuration Guide* provides information on how to use the Command Line Interface to set up and manage the DFE-Gold modules.
- *Cabling Guide* provides information on dB loss and cable specifications.

Unlike the *Matrix DFE-Gold Series Configuration Guide*, the *Cabling Guide* is not listed alphabetically on the web site. Instead, it is listed under the *Overview Guides* link.

Conventions Used in This Guide

The following conventions are used in this guide:



Note: Calls the reader's attention to any item of information that may be of special importance.



Tip: Conveys helpful hints concerning procedures or actions.



Caution: Contains information essential to avoid damage to the equipment.

Cautela: Contiene información esencial para prevenir dañar el equipo.

Achtung: Verweißt auf wichtige Informationen zum Schutz gegen Beschädigungen.



Electrical Hazard: Warns against an action that could result in personal injury or death due to an electrical hazard.

Riesgo Electrico: Advierte contra una acción que pudiera resultar en lesión corporal o la muerte debido a un riesgo eléctrico.

Elektrischer Gefahrenhinweis: Warnung vor sämtlichen Handlungen, die zu Verletzung von Personen oder Todesfällen – hervorgerufen durch elektrische Spannung – führen können!



Warning: Warns against an action that could result in personal injury or death.

Advertencia: Advierte contra una acción que pudiera resultar en lesión corporal o la muerte.

Warnhinweis: Warnung vor Handlungen, die zu Verletzung von Personen oder gar Todesfällen führen können!

Lowercase X: Indicates the general use of an alphanumeric character (for example, 6x1xx, the x's indicate a combination of numbers or letters).

Introduction

This chapter provides an overview of the DFE-Gold module capabilities, and introduces the 4H4282-49, 4H4283-49, 4H4203-72, 4H4202-72, and 4H4284-49 DFE-Gold modules.

Important Notice

Depending on the firmware version used in the DFE-Gold module, some features described in this document may not be supported. Refer to the Release Notes shipped with the DFE-Gold module to determine which features are supported.

Overview of DFE-Gold Series Capabilities

The series of DFE-Gold modules provide you with a large number of capabilities, including the following:

- Capability of supporting high speed Ethernet gigabit traffic to desktop devices
- Better security and service-delivery capabilities at the edge of the network
- A highly scalable and fault tolerant switch infrastructure
- Support new applications, including those that have special requirements, such as:
 - VoIP
 - Video
 - New business improvement applications for Customer Relationship Management (CRM) and Enterprise Resource Planning (ERP) (also known Enterprise Resource Management).

The DFE-Gold Modules and Interface Option

This section provides an overview of the 4H4282-49, 4H4283-49, 4H4203-72 ([Figure 1-1](#)), 4H4202-72, and 4H4284-49 ([Figure 1-2](#)) DFE-Gold modules, and the 7G-6MGBIC Ethernet interface module (shown in [Figure 1-3](#)).

The DFE-Gold modules can be installed in a Matrix N3, N7, or E7 chassis.



Caution: Regardless of which chassis is used, the chassis system must be dedicated to DFE-Gold modules (4xxxxx) only. Do not insert 7xxxxx modules or other legacy modules into the same chassis with 4xxxxx modules as this will render the chassis inoperable.

The DFE-Gold module ports can be configured to control traffic by limiting the rate of traffic accepted into the module and prioritizing traffic to expedite the flow of higher priority traffic through the module.

The DFE-Gold module receives power and backplane connectivity when it is inserted into the chassis.

The information concerning how to configure the DFE module features are provided in the *Matrix DFE-Gold Series Configuration Guide*.

4H4282-49

The 4H4282-49 is an edge-network switch with 48, 10BASE-T/100BASE-TX compliant ports, through fixed front panel RJ45 connectors and an option slot for a 7G-6MGBIC interface module, which can support up to six 1-Gigabit ports through optional Mini-GBICs. Each of the fixed front panel ports can operate in either half-duplex or full-duplex mode of operation. The duplex mode can be determined by either auto-negotiation or manual configuration.

4H4283-49

The 4H4283-49 is an edge-network switch with 48, 10BASE-T/100BASE-TX compliant ports through four fixed front-panel RJ21 connectors and an option slot for a 7G-6MGBIC interface module, which can support up to six 1-Gigabit ports through optional Mini-GBICs. Each of the fixed front panel ports can operate in either half-duplex or full-duplex mode of operation. The duplex mode can be determined by either auto-negotiation or manual configuration.

4H4203-72

The 4H4203-72 has 72, 10BASE-T/100BASE-TX compliant ports through six front-panel RJ21 connectors. Each of the fixed front panel ports can operate in either half-duplex or full-duplex mode of operation. The duplex mode can be determined by either auto-negotiation or manual configuration.

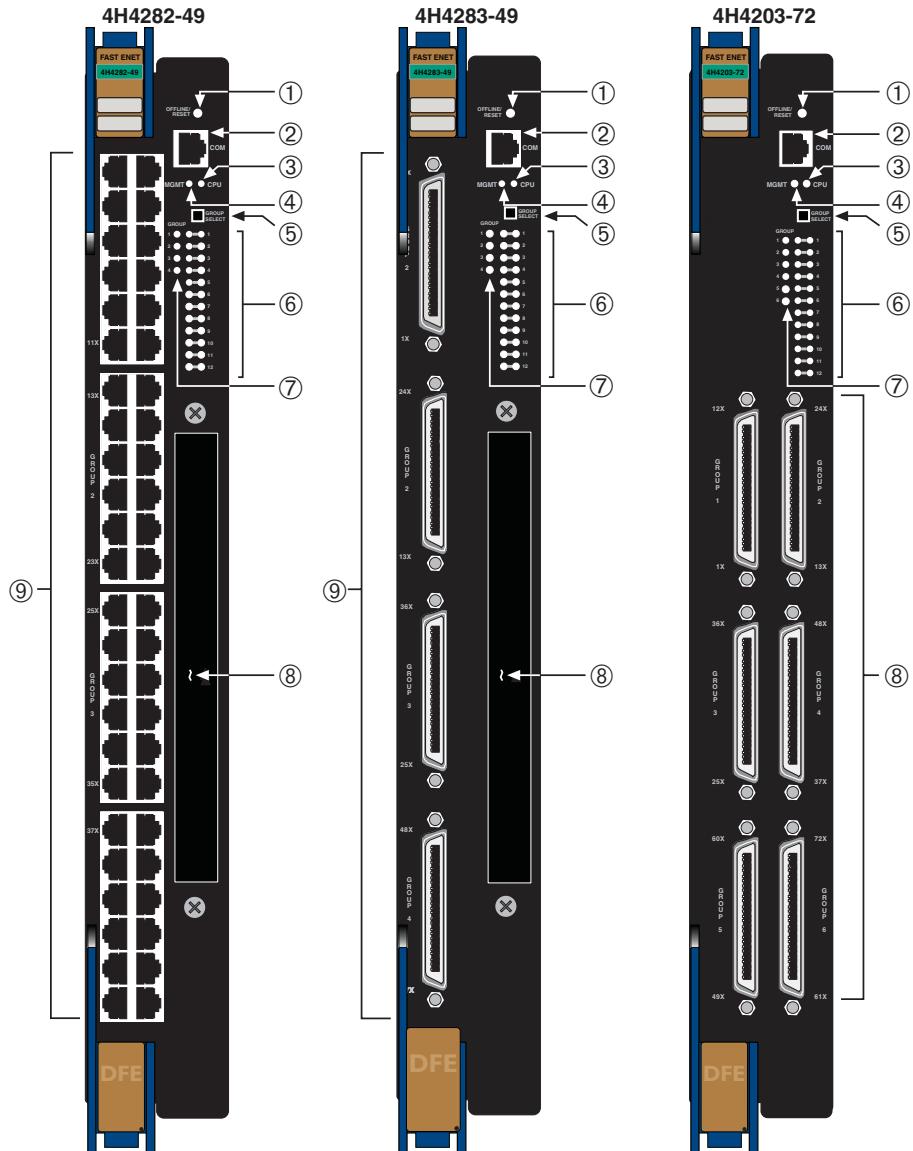
4H4202-72

The 4H4202-72 has 72, 10BASE-T/100BASE-TX compliant ports, through fixed front panel RJ45 connectors. Each of the fixed front panel ports can operate in either half-duplex or full-duplex mode of operation. The duplex mode can be determined by either auto-negotiation or manual configuration.

4H4284-49

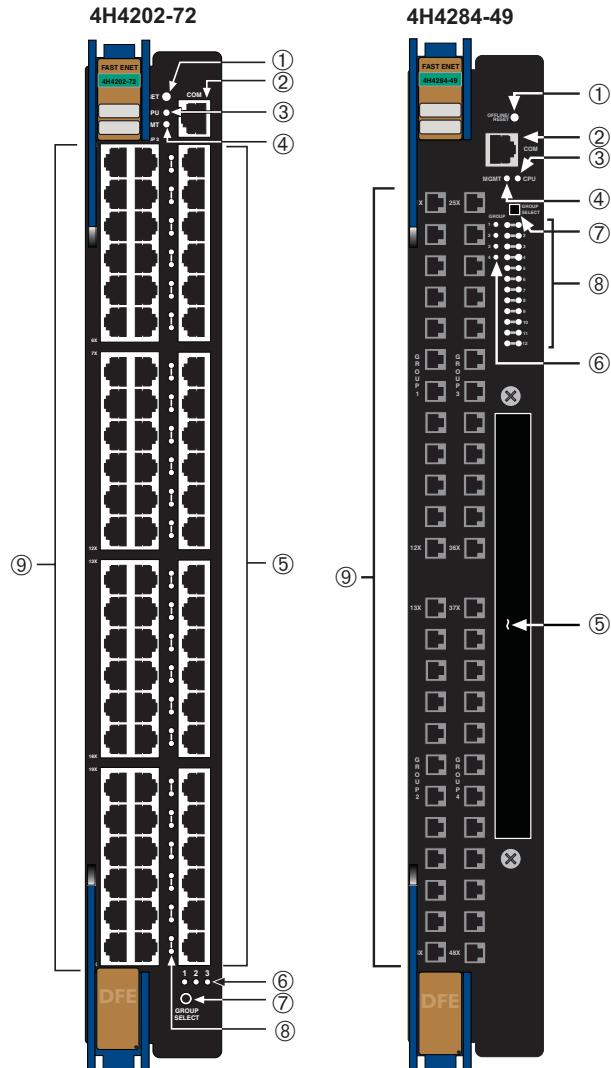
The 4H4284-49 DFE-Gold module has 48, 100BASE-FX compliant ports, through fixed front panel MT-RJ connectors and a slot for the optional 7G-6MGBIC interface module, which can support up to six 1-Gigabit ports.

Figure 1-1 4H4282-49, 4H4283-49, and 4H4203-72 DFE-Gold Modules



- 1 OFFLINE/RESET button
- 2 RJ45 COM (Console Port)
- 3 CPU LED
- 4 MGMT LED
- 5 GROUP SELECT button

- 6 GROUP status LEDs
- 7 GROUP select LEDs
- 8 4H4282-49/4H4283-49 - Ethernet Interface Module option slot
4H4203-72 - Ports (1-72), 10/100, through six RJ21s
- 9 4H4282-49 - Ports (1-48), 10/100, through RJ45s
4H4283-49 - Ports (1-48), 10/100, through four RJ21s

Figure 1-2 4H4202-72 and 4H4284-49 DFE-Gold Modules

1 OFFLINE/RESET switch

2 RJ45 COM (Console Port)

3 CPU LED

4 MGMT LED

5 4H4202-72 - Group 3, 24 Ports, 10/100, through RJ45s

4H4284-49 - Ethernet Interface Module option slot

6 GROUP select LEDs

7 GROUP SELECT button

8 GROUP status LEDs

9 4H4202-72 - Groups 1&2, 48 Ports, 10/100, through RJ45s

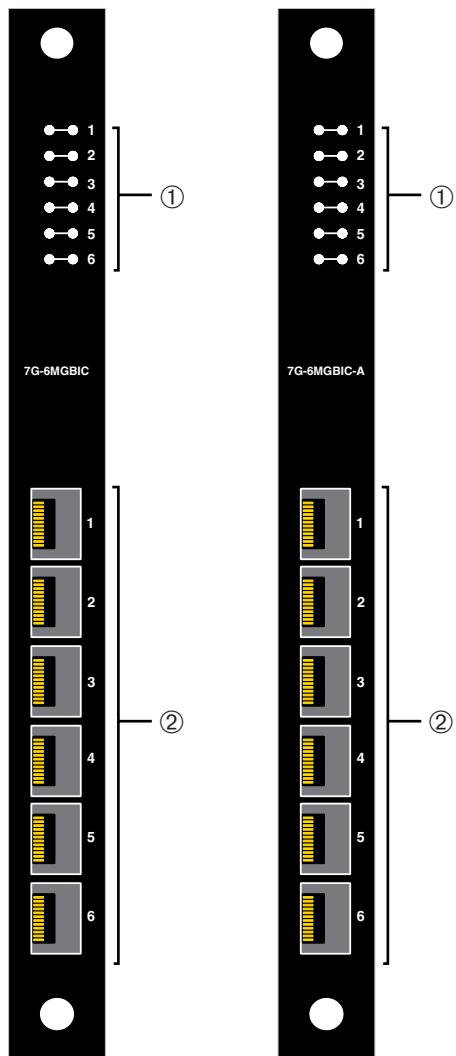
4H4284-49 - Ports (1-48), 100, through multimode fiber-optic MT-RJ transceivers

7G-6MGBIC and 7G-6MGBIC-A Gigabit Ethernet Interface Options

The front panel option slot in the 4H4282-49, 4H4283-49, and 4H4284-49 supports the installation of an uplink interface module such as the 7G-6MGBIC and 7G-6MGBIC-A.

Figure 1-3 shows the Ethernet interface modules available at the time of this printing. **Table 1-1** indicates the standards the module complies with and the type of physical connections.

Figure 1-3 Optional 7G-6MGBIC and 7G-6MGBIC-A Ethernet Interface Modules



1 Port status LEDs

2 1-Gigabit port slots for Mini-GBIC uplinks

Table 1-1 Optional Ethernet Interface Module, Compliance, and Physical Connection

Ethernet Interface Module	Compliant to	Physical Connection
7G-6MGBIC and 7G-6MGBIC-A	1-Gigabit Ethernet	Six port slots that support optional hot-swappable Mini-GBICs.

Connectivity

4H4282-49

Depending on how the 4H4282-49 ([Figure 1-1](#)) is configured, it can support up to:

- 48, 10BASE-T/100BASE-TX switched ports connected through 48 fixed, RJ45 front-panel connectors, or
- 48, 10BASE-T/100BASE-TX switched ports connected through 48 fixed, RJ45 front-panel connectors and an optional Gigabit interface module.

4H4283-49

Depending on how the 4H4283-49 ([Figure 1-1](#)) is configured, it can support up to:

- 48, 10BASE-T/100BASE-TX switched ports connected through four fixed RJ21 front-panel connectors, or
- 48, 10BASE-T/100BASE-TX switched ports connected through four fixed RJ21 front-panel connectors and an optional Gigabit interface module.

4H4203-72

The 4H4203-72 has 10BASE-T/100BASE-TX compliant ports through six RJ21 front panel connectors.

4H4202-72

The 4H4202-72 has 72, 10BASE-T/100BASE-TX compliant ports, through 72 fixed front panel RJ45 connectors.

4H4284-49

Depending on how the 4H4284-49 ([Figure 1-1](#)) is configured, it can support up to:

- 48, 100BASE-FX compliant ports, through 48, fixed front-panel MT-RJ connectors, or
- 48, 100BASE-FX compliant ports, through 48, fixed front-panel MT-RJ connectors and an optional Gigabit interface module.

Management

Management of the module can be either in-band or out-of-band. In-band remote management is possible using Telnet, Enterasys Networks' NetSight® management application, or WebView™ application. Out-of-band management is provided through the RJ45 COM (Communication) port on the front panel using a VT100 terminal or a VT100 terminal emulator.

Switch Configuration Using WebView

Enterasys Networks' HTTP-based Web management application (WebView) is an intuitive web tool for simple management tasks.

Switch Configuration Using CLI Commands

The CLI commands enable you to perform more complete switch configuration management tasks.

For CLI command set information and how to configure the module, refer to the *Matrix DFE-Gold Series Configuration Guide*.

UPN Support

User Personalized Networks (UPN) is an architecture that allows network administrators to map network services to identified users, machines, peripherals and other network entities. UPN consists of three tiers:

- Classification rules make up the first or bottom tier. The rules apply to devices in the UPN environment, such as switches and routers. The rules are designed to be implemented at or near the user's point of entry to the network. The rules are typically at Layer 2, 3, or 4 of the OSI network model.
- The middle tier is Services, which allows multiple classification rules to be aggregated. Services can include e-mail and Internet access.
- Roles, or Behavioral Profiles make up the top tier. The roles assign services to various business functions or departments, such as executive, sales, and engineering.

To implement most roles, UPN requires authentication such as 802.1X using EAP-TLS, EAP-TTLS, or EAP-PEAP. Authorization information, attached to the authentication response, determines the application of the UPN policy. One way to communicate the authorization information is to include the Policy Name in a RADIUS Filter-ID attribute. A UPN administrator can also define a role to be implemented in the absence of an authentication and authorization.

Refer to the release notes shipped with the module for details.

The rules can only be implemented on the Matrix system by the Enterasys NetSight Policy Manager, which is described on the web site at www.enterasys.com/netsight.

Standards Compatibility

The DFE-Gold modules are fully compliant with the IEEE 802.3-2002, 802.3ae-2002, 802.1D-1998, and 802.1Q-1998 standards. The DFE-Gold module provides IEEE 802.1D-1998 Spanning Tree Algorithm (STA) support to enhance the overall reliability of the network and protect against “loop” conditions.

LANVIEW Diagnostic LEDs

LANVIEW diagnostic LEDs serve as an important troubleshooting aid by providing an easy way to observe the status of individual ports and overall network operations.

Getting Help

For additional support related to the modules or this document, contact Enterasys Networks using one of the following methods:

World Wide Web	http://www.enterasys.com/support
Phone	603-332-9400 1-800-872-8440 (toll-free in U.S. and Canada)
	For the Enterasys Networks Support toll-free number in your country: http://www.enterasys.com/support/gtac-all.html
Internet mail	support@enterasys.com
	To expedite your message, please type [eth] in the subject line.
	To send comments or suggestions concerning this document to the Technical Writing Department: techwriting@enterasys.com
	To expedite your message, please type [techwriting] in the subject line, and include the document Part Number in the email message.

Before contacting Enterasys Networks for technical support, have the following information ready:

- Your Enterasys Networks service contract number
- A description of the failure
- A description of any action(s) already taken to resolve the problem (e.g., changing mode switches, rebooting the unit, etc.)
- The serial and revision numbers of all involved Enterasys Networks products in the network
- A description of your network environment (layout, cable type, etc.)
- Network load and frame size at the time of trouble (if known)
- The device history (i.e., have you returned the device before, is this a recurring problem, etc.)
- Any previous Return Material Authorization (RMA) numbers

Network Requirements

Before installing the module, review the requirements and specifications referred to in this chapter concerning the following:

- [10BASE-T Network](#) (page 2-1)
- [100BASE-TX Network](#) (page 2-2)
- [1000BASE-SX/LX Fiber-Optic Network](#) (page 2-2)
- [1000BASE-TX Network](#) (page 2-2)
- [100BASE-FX Fiber-Optic Network](#) (page 2-2)

The network installation must meet the requirements to ensure satisfactory performance of this equipment. Failure to do so will produce poor network performance.



Note: The *Matrix DFE-Gold Series Configuration Guide* and the **Cabling Guide** referred to in the following sections can be found on the Enterasys Networks World Wide Web site: <http://www.enterasys.com/>

Refer to “[Related Documents](#)” in [About This Guide](#).

10BASE-T Network

When connecting a 10BASE-T segment to any of the module fixed front panel ports of the 4H4282-49, 4H4283-49, 4H4203-72, and 4H4202-72, ensure that the network meets the Ethernet network requirements of the IEEE 802.3-2002 standard for 10BASE-T. Refer to the **Cabling Guide** for details.



Note: If a port is to operate at 100 Mbps, Category 5 cabling must be used. Category 3 cabling does not meet 100 Mbps specifications. For 10 Mbps operation only, Category 3 or Category 5 cabling can be used. Refer to “[100BASE-TX Network](#)” on page 2-2 for information about 100BASE-TX networks and cabling.

100BASE-TX Network

Fixed front panel ports of the 4H4282-49, 4H4283-49, 4H4203-72, and 4H4202-72 provide a connection that supports Category 5 UTP cabling. The device at the other end of the twisted pair segment must meet IEEE 802.3-2002 100BASE-TX Fast Ethernet network requirements for the devices to operate at 100 Mbps. Refer to the *Cabling Guide* for details.



Note: The fixed ports of the module support Category 5 UTP cabling with an impedance between 85 and 111 ohms for 100 Mbps operation.

The module is capable of operating at either 10 or 100 Mbps. The module automatically senses the speed of the other device and adjusts its speed accordingly.

1000BASE-SX/LX Fiber-Optic Network

Optional Mini-GBICs provide a Gigabit Ethernet connection to the optional 7G-6MGBIC interface module to provide fiber-optic connections operating at 1000 Mbps (1 Gbps). The device at the other end of the fiber-optic connection must meet IEEE 802.3-2002 Gigabit Ethernet requirements for the devices to operate at Gigabit speed. Refer to [Appendix A](#) for further details on Mini-GBIC specifications.

1000BASE-TX Network

Optional Mini-GBICs can also provide a copper-wire connection that supports Category 5 UTP cabling. The device at the other end of the twisted pair segment must meet IEEE 802.3-2002 1000BASE-TX Fast Ethernet network requirements for the devices to operate at 1000 Mbps. Refer to [Appendix A](#) for further details on Mini-GBIC specifications.

100BASE-FX Fiber-Optic Network

The 4H4284-49 DFE-Gold module provides 48 ports that support 100 Mbps multimode fiber-optic connectivity through 48 fixed front-panel MT-RJ connectors, which support 100BASE-FX fiber-optic cabling. The device at the other end of the fiber-optic segment must meet 100BASE-FX Fast Ethernet network requirements for the devices to operate at 100 Mbps. IEEE 802.3u 100BASE-FX characteristics for Multimode Fiber is a segment length of 412 meters (switched port) in half duplex, 2 kilometers (switched port) in full duplex. This distance will be considerably shorter from a repeater port. Make sure to check your network diameter specifications. Refer to the *Cabling Guide* for details.

3

Installation



Electrical Hazard: Only qualified personnel should perform installation procedures.

Riesgo Electrico: Solamente personal calificado debe realizar procedimientos de instalacion.

Elektrischer Gefahrenhinweis: Installationen sollten nur durch ausgebildetes und qualifiziertes Personal vorgenommen werden.

Important Notice

Read the Release Notes shipped with the DFE-Gold module to check for any exceptions to the supported features and operation documented in this guide.

This chapter provides the instructions to install the 4H4282-49, 4H4283-49, 4H4203-72, 4H4202-72, and 4H4284-49 DFE-Gold modules and optional interface module 7G-6MGBIC.



Note: Unless otherwise noted, the installation instructions apply to all DFE-Gold modules.

A Phillips screwdriver is required to install an optional interface module into the 4H4282-49, 4H4283-49, or 4H4284-49. Follow the order of the sections listed below to correctly install the modules.

- [Unpacking the DFE-Gold Module](#) (page 3-2)
- [Installing Optional Ethernet Interface Module](#) (page 3-2)
- [Installing an Optional Mini-GBIC](#) (page 3-5)
- [Installation Rules](#) (page 3-8)
- [Installing Module into a Matrix E7 or Matrix N7 Chassis](#) (page 3-10)
- [Installing Module into Matrix N3 Chassis](#) (page 3-13)
- [Connecting to the Network](#) (page 3-14)

- [Connecting to COM Port for Local Management \(page 3-26\)](#)
- [Completing the Installation \(page 3-32\)](#)

Unpacking the DFE-Gold Module

Unpack the DFE-Gold module as follows:

1. Open the box and remove the packing material protecting the DFE-Gold module.
2. Verify the contents of the carton as listed in [Table 3-1](#).

Table 3-1 Contents of DFE-Gold Module Carton

Item	Quantity
DFE-Gold module	1
Installation Guide	1
Customer Release Notes	1

3. Remove the tape seal on the non-conductive bag to remove the DFE-Gold module.
4. Perform a visual inspection of the DFE-Gold module for any signs of physical damage. Contact Enterasys Networks if there are any signs of damage. Refer to ["Getting Help"](#) on page 1-10 for details.

Installing Optional Ethernet Interface Module



Note: Install any optional equipment before proceeding to the section, "[Installation Rules](#)," on page 3-8 for an explanation of the rules to install different series modules in a Matrix E7 chassis.

At the time of this printing, only the 7G-6MGBIC is available for the 4H4282-49, 4H4283-49, and 4H4284-49. Refer to your release notes for the latest available Ethernet interface modules. The 7G-6MGBIC provides six 1-Gigabit port slots for optional Mini-GBIC connections.

Installing a 7G-6MGBIC involves

- removing the coverplate from the DFE-Gold module (4H4282-49, 4H4283-49, or 4H4284-49),
- attaching the 7G-6MGBIC to the DFE-Gold module, and
- installing the Mini-GBICs.



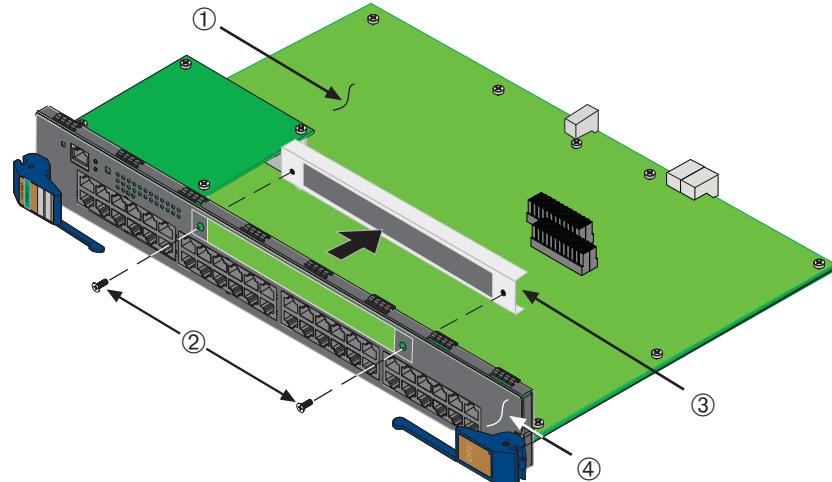
Caution: An antistatic wrist strap is required to perform the following procedures to minimize ESD damage to the devices involved.

Removing the Coverplate

Refer to [Figure 3-1](#) and proceed as follows:

1. Attach the antistatic wrist strap (refer to the instructions on the antistatic wrist strap package).
2. Place the DFE-Gold module on an antistatic pad on a sturdy flat surface.

Figure 3-1 Removing the Coverplate



1 DFE-Gold module (4H4282-49 shown as example)

2 Coverplate screws (2)

3 Coverplate

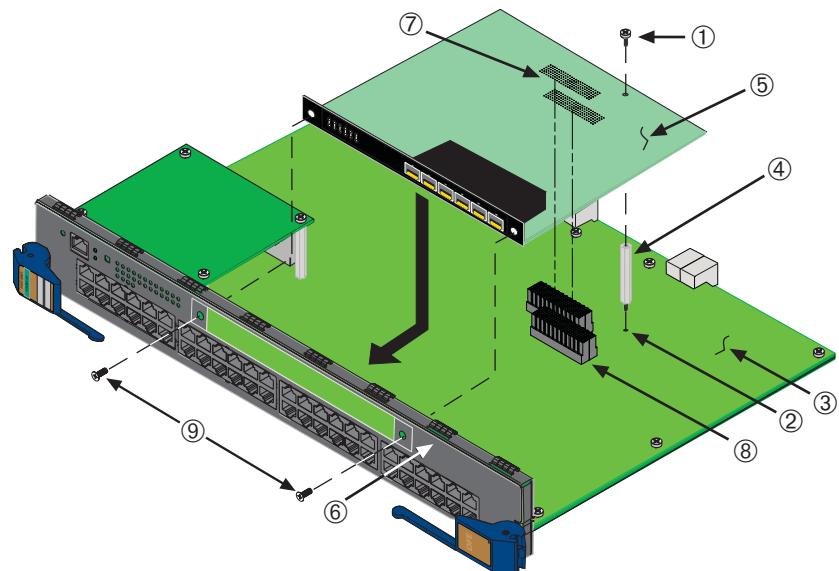
4 DFE Module front panel

3. Remove the two screws fastening the coverplate to the DFE-Gold module front panel. Save the two screws for installing the optional interface module.

Installing the 7G-6MGBIC

Refer to [Figure 3-2](#) and proceed as follows:

1. Remove and save the screw from the screw hole in the main board.
2. Locate the standoff shipped with the interface module and screw it into the same screw hole in the main board.
3. Position the interface module so its front panel is under the edge of the DFE-Gold module front panel.
4. Carefully align the two interface module connectors with the main board connectors. Then press straight down over the two interface module connectors, applying pressure until they are properly seated.

Figure 3-2 Installing the Ethernet Interface Module

1 Screw (1)	4 Standoff	7 Interface module connectors
2 Screw hole	5 Optional interface module	8 Main board connectors
3 Main board	6 DFE-Gold module front panel	9 Coverplate screws (2)

5. Use the two saved coverplate screws to fasten the interface module to the DFE-Gold module front panel. Do not tighten the two coverplate screws at this time.
6. Use the screw removed from the main board and fasten the interface module to the standoff. Tighten the screw.
7. Tighten the two coverplate screws.
8. This completes the interface module installation. To install Mini-GBICs into the interface module, proceed to “[Installing an Optional Mini-GBIC](#)” on page 3-5. Otherwise, proceed to “[Installation Rules](#)” on page 3-8 to install the module into the chassis.

Installing an Optional Mini-GBIC

This section describes how to install a Mini-GBIC in an optional 7G-6MGBIC.



Warning: Fiber-optic Mini-GBICs use Class 1 lasers. Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, power must be removed from the network adapter.

Advertencia: Los Mini-GBICS de fibra optica usan lasers de clase 1. No se debe usar instrumentos opticos para ver la potencia laser. El uso de los instrumentos opticos para ver la potencia laser incrementa el riesgo a los ojos. Cuando vean el puerto de la potencia optica, la corriente debe ser removida del adaptador de la red.

Warnhinweis: Mini-GBICs mit Fiber-Optik Technologie benutzen Laser der Klasse 1. Benutzen sie keinesfalls optische Hilfsmittel, um die Funktion des Lasers zu überprüfen. Solche Hilfsmittel erhöhen die Gefahr von Sehschäden. Wenn sie den optischen Port überprüfen möchten stellen Sie sicher, dass die Komponente von der Spannungsversorgung getrennt ist.



Caution: Carefully follow the instructions in this manual to avoid damaging the Mini-GBIC, 7G-6MGBIC, and DFE-Gold module.

The Mini-GBIC, 7G-6MGBIC, and DFE-Gold module are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damage to the Mini-GBIC, 7G-6MGBIC, and DFE-Gold module. Always leave the Mini-GBIC in the antistatic bag or an equivalent antistatic container when not installed.

To prepare and install a Mini-GBIC, proceed as follows:

Preparation

Before installing the Mini-GBIC, proceed as follows:

1. Attach the antistatic wrist strap (refer to the instructions in the antistatic wrist strap package) before removing the Mini-GBIC from the antistatic packaging.
2. Remove the Mini-GBIC from the packaging.
3. If there is a protective dust cover (see 5 in [Figure 3-3](#) or [Figure 3-4](#)) on the Mini-GBIC port, do not remove it at this time.

Installation

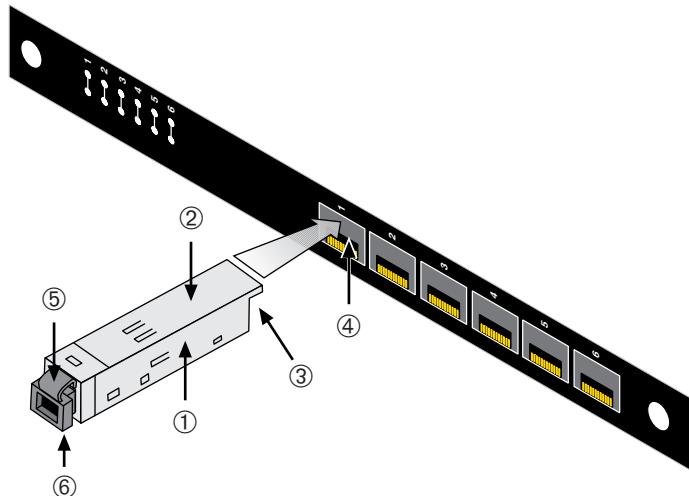
To install a Mini-GBIC with an MT-RJ connection, refer to [Figure 3-3](#), or for a Mini-GBIC with an LC connection, refer to [Figure 3-4](#), and proceed as follows:



Note: If the Mini-GBIC is one with an RJ45 connector (not shown), the installation procedure is the same as described below. However, the Mini-GBIC has a wire handle to release it.

1. Hold the Mini-GBIC with its top side facing up and its 7-pin edge connector facing the port slot.
2. Carefully align the Mini-GBIC with the port slot.
3. Push the Mini-GBIC into the port slot until the Mini-GBIC “clicks” and locks into place.

Figure 3-3 Mini-GBIC with MT-RJ Connector



1 Mini-GBIC (MGBIC-MT01)

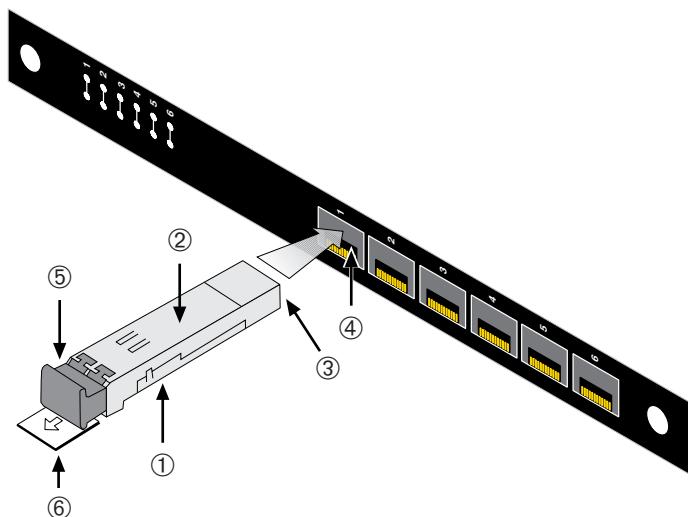
4 Port slot

2 Mini-GBIC, top side

5 Mini-GBIC, protective dust cover

3 7-Pin edge connector (insertion side)

6 Release tab

Figure 3-4 Mini-GBIC with LC Connector

1 Mini-GBIC (MGBIC-LC01 or MGBIC-LC09)	4 Port slot
2 Mini-GBIC, top side	5 Mini-GBIC, protective dust cover
3 7-Pin edge connector (insertion side)	6 Release tab

Removing the Mini-GBIC



Caution: Do NOT remove a Mini-GBIC from a slot without releasing the locking tab located under the front bottom end of the Mini-GBIC. This can damage the Mini-GBIC. This is also true of the RJ45 Mini-GBICs with a wire handle. The handle must be pulled down toward the bottom of the Mini-GBIC to release it.

The Mini-GBIC and its host device are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damaging the Mini-GBIC or host device. Always leave the Mini-GBIC in the antistatic bag or an equivalent antistatic container when not installed.

To remove a Mini-GBIC from a port slot, refer back to [Figure 3-3](#) and [Figure 3-4](#), and proceed as follows:

1. Attach the antistatic wrist strap (refer to the instructions in the antistatic wrist strap package) before removing the Mini-GBIC.
2. Remove the cables connected to the Mini-GBIC.
3. Locate the release tab under the front end of the Mini-GBIC. For the type of Mini-GBIC shown in [Figure 3-3](#), push in on the release tab as far as it will go to release the Mini-GBIC from the port slot. For the type of Mini-GBIC shown in [Figure 3-4](#), pull out on the release tab to release the Mini-GBIC from the port slot.

4. Grasp the sides of the Mini-GBIC and pull it straight out of the port slot.

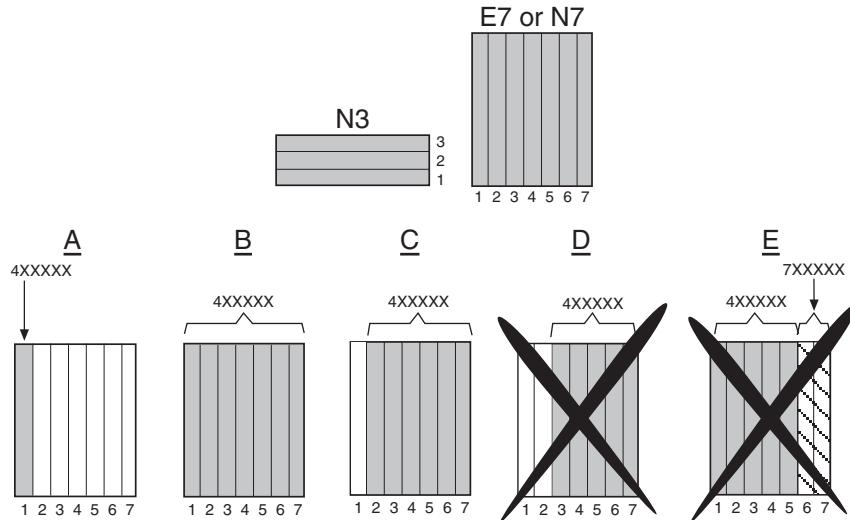
If storing or shipping the Mini-GBIC, reinsert the Mini-GBIC dust cover to protect the end of the fiber-optic strands.

Installation Rules

Module Placement and Rules

The DFE-Gold modules can be installed in a Matrix N3, Matrix N7, or Matrix E7 chassis. The slot locations in the three chassis are identified in [Figure 3-5](#) along with five module configuration examples.

Figure 3-5 Examples, Slot Numbers and Module Placement in Matrix N3, E7, or N7



To ensure proper operation of the system, consider the following examples and rules for module placement in either chassis.

Example 1 ([Figure 3-5, A](#))

Shows one module installed in the chassis. If the chassis is populated with only one 4xxxxx, it must be installed in slot 1.

Rule: If only one 4xxxxx is installed in the chassis, it must be in slot 1. Always install a 4xxxxx in slot 1 of the chassis.

Example 2 (Figure 3-5, B)

Shows the chassis fully populated with 4xxxxx modules. By default, the chassis system can continue to operate after losing operation of all modules except the module in slot 1. (The loss of operation can be due to module reset, removal, or failure.) However, with the redundancy key installed, the system will remain operational provided that there is an operating module in slot 1 or 2.



Caution: When installing a module into slot 1 of a non-operating chassis, it is strongly recommended that the module have the desired version of firmware. Installation of a replacement module into slot 1 of a non-operating chassis requires reconfiguration of the system settings.

The chassis system can be configured for two-module management redundancy using cli command: `set license redundancy <license key>`

For information on how to use this command, refer to the *Matrix DFE-Gold Series Configuration Guide*. To access this guide on the web, refer to “[Related Documents](#)” on page xv.

Rule: By default, the operation of all modules, except for the one in slot 1, can be lost without losing system operation. With the redundancy key installed, the system will remain in operation provided the module in slot 1 or 2 is operational.

Example 3 (Figure 3-5, C)

Shows the module missing from slot 1. As long as the redundancy key has been programmed into the system and the module in slot 2 is operational, the system will continue to operate.



Caution: When installing a module into slot 1 of a non-operating chassis, it is strongly recommended that the module have the desired version of firmware. When installing a replacement module into slot 1 of a non-operating chassis, it is necessary to reconfigure the system settings.

Rule: You can power up the system completely as long as there is a module in slot 1. With the redundancy key installed, you can power up the system completely as long as there is an operating module in slot 1 or 2.

Example 4 (Figure 3-5, D)

Shows a chassis populated with 4xxxxx modules in all slots except 1 and 2. This system is **not operational** because there is no module in slot 1 or 2 for management purposes.

Rule: In a 4xxxxx system, the chassis system will not operate with modules missing from slots 1 and 2.

Example 5 (Figure 3-5, E)

Shows a chassis populated with 4xxxxx and 7xxxxx modules. **DO NOT** install 4xxxxx and 7xxxxx modules in the same chassis. In a 4xxxxx system, the chassis must be dedicated to DFE-Gold modules only.

Rule: In a 4xxxxx system, the chassis must be populated with only 4xxxxx modules to operate.

Installing Module into a Matrix E7 or Matrix N7 Chassis



Caution: Failure to observe static safety precautions could cause damage to the DFE-Gold module. Follow static safety handling rules and wear the antistatic wrist strap.

Do not cut the non-conductive bag to remove the module. Sharp objects contacting the board or components can cause damage.

To install a DFE-Gold module into a Matrix E7 or Matrix N7 chassis, proceed directly to “[Preparation](#)” on page 3-10 to start the installation process.

Preparation

1. Remove the blank panel covering the slot in which the module will be installed. All other slots must remain covered to ensure proper airflow for cooling. (Save the blank plate in the event you need to remove the module.)
2. Remove the module from the shipping box. (Save the box and packing materials in the event the module needs to be reshipped.)
3. Locate the antistatic wrist strap shipped with the chassis. Attach the antistatic wrist strap to your wrist and plug the cable from the antistatic wrist strap into the ESD grounding receptacle at the upper right corner of the chassis.
4. Remove the module from the plastic bag. (Save the bag in the event the module must be reshipped.) Observe all precautions to prevent damage from Electrostatic Discharge (ESD).
5. Examine the module for damage. If any damage exists, **DO NOT** install the module. Immediately contact Enterasys Networks. Refer to “[Getting Help](#)” on page 1-10.

Installation

To install the module, refer to [Figure 3-6](#) and proceed as follows:



Caution: To prevent damaging the backplane connectors in the following step, take care that the module slides in straight and properly engages the backplane connectors.

Ensure that the top lever lines up with the desired slot number located on the front panel of the chassis.

1. Locate the chassis card guides that line up with the slot number in which the module will be installed. (In this example, slot 1 is being used.) Make sure the module locking levers are in the open position (top and bottom).
2. Align the module card between the upper and lower card guides of the desired slot and slide it into the chassis, taking care that the module slides in straight. See Caution below.



Caution: Due to the amount of force needed to properly seat the module connectors into the backplane connectors, it is best to apply force to the end of the levers to insert (or eject) the module. Otherwise, damage could result to the module and chassis.

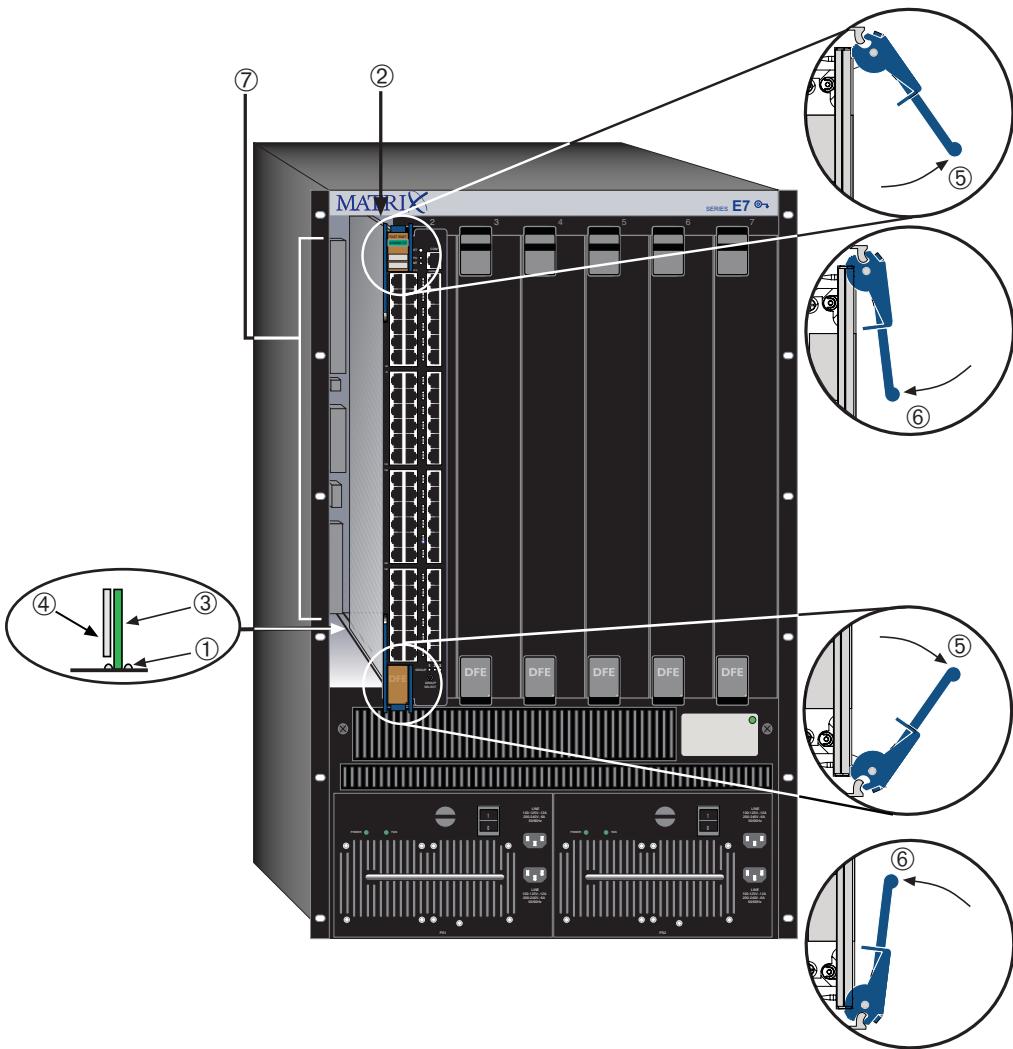
3. Slide the module into the slot until you can engage the top and bottom locking levers with the chassis as shown in [Figure 3-6](#).



Caution: In step 4, do not force the locking levers to the point that they touch the face of the front panel. Forcing the locking levers to this point could damage the module and chassis.

4. Refer to the Caution note above, then rotate the two levers into the closed position.
5. If the chassis in which the module is installed was powered down for the installation, turn the power supplies on. Check to see that the module CPU LED settles at solid green after a few minutes. If the LED does not turn solid green, refer to [Chapter 4](#) for troubleshooting details.

Figure 3-6 Installing Module into Matrix E7 or N7 Chassis (Matrix E7 shown)



- 1 Card guides
- 2 Slot number 1(right-most slot is 7)
- 3 Module card
- 4 Metal back panel

- 5 Upper/lower locking tabs (in proper open position)
- 6 Upper/lower locking tab (in closed position)
- 7 Backplane connectors (power and FTM2)

Installing Module into Matrix N3 Chassis



Caution: Failure to observe static safety precautions could cause damage to the DFE-Gold module. Follow static safety handling rules and wear the antistatic wrist strap.

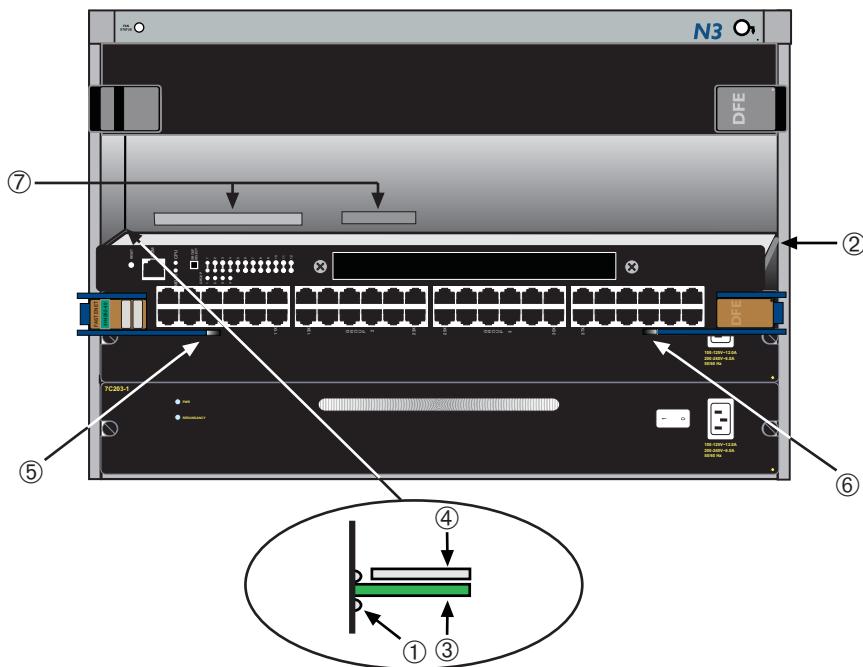
Do not cut the non-conductive bag to remove the DFE-Gold module. Sharp objects contacting the board or components can cause damage.

To install a DFE-Gold module, refer to [Figure 3-7](#) and use the same procedure described in [“Installing Module into a Matrix E7 or Matrix N7 Chassis”](#) on page 3-10. As with the E7 and N7 chassis, 7xxxxx modules cannot be installed with the 4xxxxx modules.



Caution: When setting the locking levers to the closed position, do not try to force the locking levers to the point that they touch the face of the front panel. Forcing the locking levers to this point could damage the module and chassis.

Figure 3-7 **Installing Module into Matrix N3 Chassis**



1 Card guides

2 Slot 1 (Top slot is slot 3.)

3 Module card

4 Metal back panel

5 Upper locking tab (shown in closed position)

6 Lower locking tab (shown in closed position)

7 FTM2 backplane and power connectors

Connecting to the Network

For connecting unshielded twisted pair (UTP) segments from the network or other devices, refer to

- [Connecting UTP Cables to 4H4282-49 or 4H4202-72 \(page 3-14\)](#)
- [Connecting UTP Cables to 4H4283-49 or 4H4203-72 \(page 3-18\)](#)

For fiber-optic connections to Mini-GBIC ports, refer to

- [Connecting Fiber-Optic Cables to 4H4284-49 \(page 3-21\)](#)
- [Connecting Fiber-Optic Cables to 7G-6MGBIC \(page 3-23\)](#)



Note: If the DFE-Gold module is being installed in a network using Link Aggregation, there are rules concerning the network cable and port configurations that must be followed for Link Aggregation to operate properly. Before connecting the cables, refer to the *Matrix DFE-Gold Series Configuration Guide* for the configuration information. For details on how to obtain manuals, refer to “[Related Documents](#)” on page xv.

Connecting UTP Cables to 4H4282-49 or 4H4202-72

The fixed RJ45 front panel connections of the 4H4282-49 and 4H4202-72 are 10/100 Mbps ports. The ports have internal crossovers, and also support automatic-polarity sensing when configured for automatic-negotiation.

If automatic-negotiation is not activated on a port, use a straight-through cable when connecting a workstation to the port. When connecting a networking device to the port, such as a bridge, repeater, or router, use a crossover cable.

If a port is set for auto-negotiation, automatic-polarity sensing is also activated. Automatic-polarity sensing eliminates the need for a crossover cable, regardless if the connection is to another network device or a workstation.



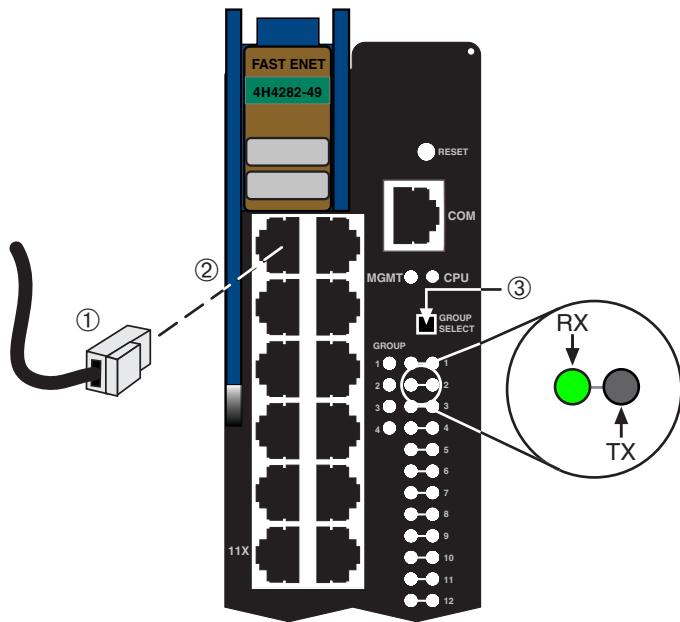
Note: All RJ45 front panel ports on the 4H4282-49 and 4H4202-72 support Category 5 Unshielded Twisted Pair (UTP) cabling with an impedance between 85 and 111 ohms. Category 3 cable may be used if the connection is going to be used only for 10 Mbps.

In this procedure, the 4H4282-49 is used as the example to connect a twisted pair segment with RJ45 connectors to the DFE-Gold module. Refer to [Figure 3-8](#) and proceed as follows:

1. Ensure that the device connected to the other end of the segment is powered ON.

2. Connect the twisted pair segment to the module by inserting the RJ45 connector on the twisted pair segment into the appropriate RJ45 port connector.

Figure 3-8 Connecting a Twisted Pair Segment With RJ45 Connector



1 RJ45 connector

2 RJ45 port connector

3 GROUP SELECT button

3. Verify that a link exists by checking that the port RX (Receive) LED is ON (flashing amber, blinking green, or solid green). If the RX LED is OFF and the TX (Transmit) LED is not blinking amber, perform the following steps until it is on:
 - a. To view the receive and transmit activity on a group of segments, press the GROUP SELECT button (see [Figure 3-8](#)) to step to the group of interest (Groups 1 through 4). Each time the GROUP SELECT button is pressed, the GROUP LED lights up in sequence, indicating which Group is selected. The receive and transmit activity for that group of segments is then indicated by the RX and TX LEDs for each segment.
 - b. Verify that the cabling being used is Category 5 UTP with an impedance between 85 and 111 ohms. If the port is to operate at 100 Mbps, category 5 cabling must be used.
 - c. Verify that the device at the other end of the twisted pair segment is on and properly connected to the segment.

d. Verify that the RJ45 connectors on the twisted pair segment have the proper pinouts and check the cable for continuity. Typically, a crossover cable is used between hub devices. A straight-through cable is used to connect between switches or hub devices and an end user (computer). Refer to [Figure 3-9](#) and [Figure 3-10](#) for four-wire RJ45 connections. Refer to [Figure 3-11](#) and [Figure 3-12](#) for eight-wire RJ45 connections.

Figure 3-9 Four-Wire Crossover Cable RJ45 Pinouts, Connections Between Hub Devices

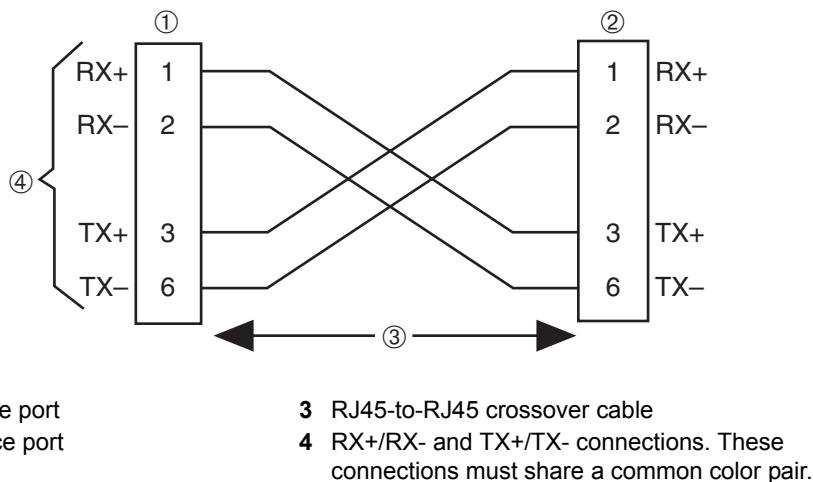


Figure 3-10 Four-Wire Straight-Through Cable RJ45 Pinouts, Connections Between Switches and End-User Devices

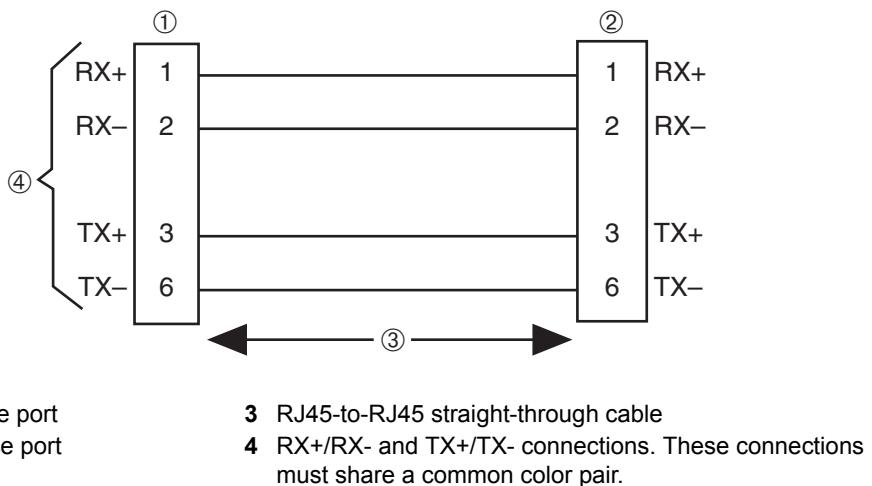
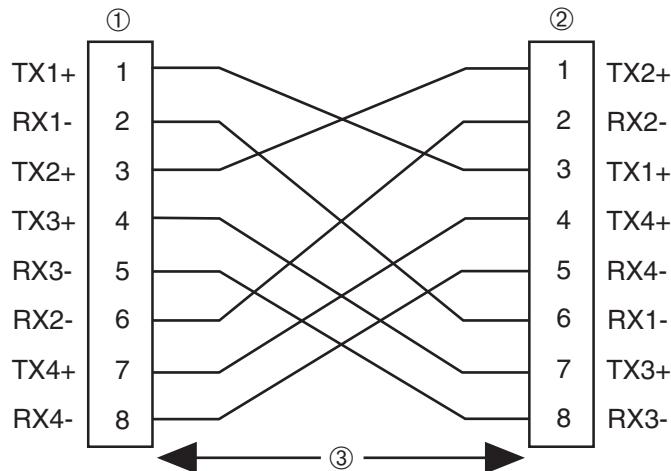


Figure 3-11 Eight-Wire Crossover Cable RJ45 Pinouts, Connections Between Hub Devices

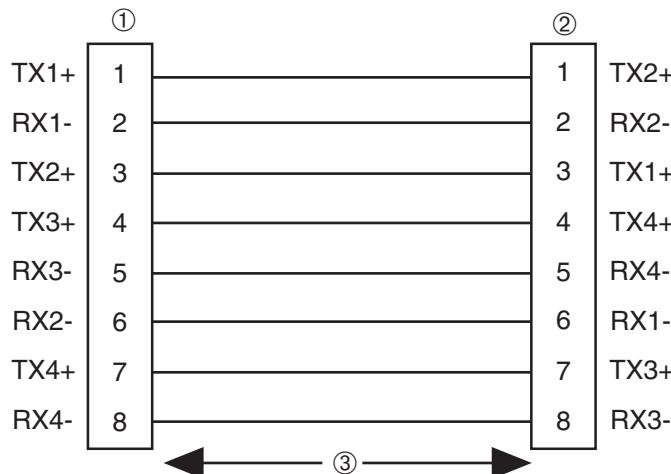


1 RJ45 device port

3 RJ45-to-RJ45 crossover cable

2 Other device port

Figure 3-12 Eight-Wire Straight-Through Cable RJ45 Pinouts, Connections Between Switches and End-User Devices



1 RJ45 device port

3 RJ45-to-RJ45 straight-through cable

2 Other device port

- e. Ensure that the twisted pair connection meets the dB loss and cable specifications outlined in the *Cabling Guide*. Refer to "[Related Documents](#)" on page xv for information on obtaining this document.

If a link is not established, contact Enterasys Networks. Refer to "[Getting Help](#)" on page 1-10 for details.

4. Repeat steps 1 through 3 above, until all connections have been made.

Connecting UTP Cables to 4H4283-49 or 4H4203-72

The 4H4283-49 and 4H4203-72 have fixed RJ21 connectors. Each RJ21 connector can support up to 12 segments. You can use either straight RJ21 cable connectors or right-angle RJ21 connectors with optional RJ21 angle adapters.

To connect a UTP segment to the 4H4283-49 or 4H4203-72, proceed as follows:

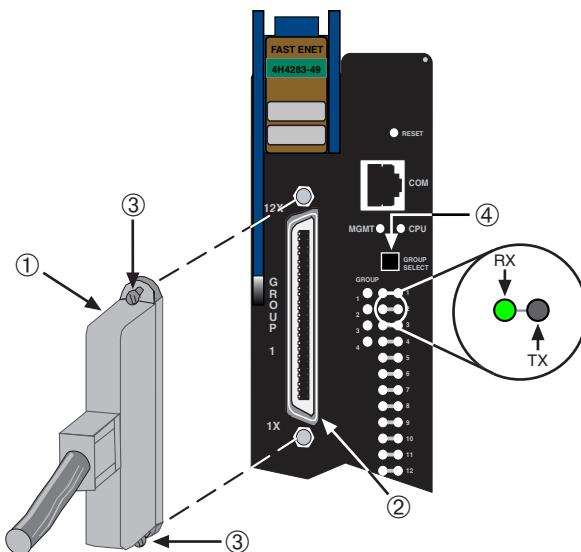
1. Ensure that the device connected to the other end of the segment is powered ON. If using RJ21 straight connectors, proceed to [step 2](#). If using RJ21 connectors with optional RJ21 angle adapters, proceed to [step 3](#).
2. If using an RJ21 straight connector, refer to [Figure 3-13](#) and proceed as follows. If using RJ21 right-angle cable connectors, proceed to [Step 3](#) on page 3-19.
 - a. Plug the RJ21 straight connector into the appropriate RJ21 port connector.
 - b. Tighten the two screws to secure the RJ21 straight connector to the RJ21 port connector.



Note: The cable pinouts for a 25-pair cable (RJ21) can be found in the *Cabling Guide*. Refer to "[Related Documents](#)" on page xv for details on how to obtain this document.

- c. Proceed to [step 4](#).

Figure 3-13 Connecting a Twisted Pair Using RJ21 Straight Connector



1 RJ21 straight connector
2 RJ21 port connector

3 Retaining screws
4 GROUP SELECT button

3. To install an RJ21 right-angle connector, refer to [Figure 3-14](#) and proceed as follows:



Tip: When installing more than one RJ21 right-angle connector, start with the bottom-most front-panel RJ21 connector so that the cables will dress properly over the front panel as shown in [Figure 3-14](#).

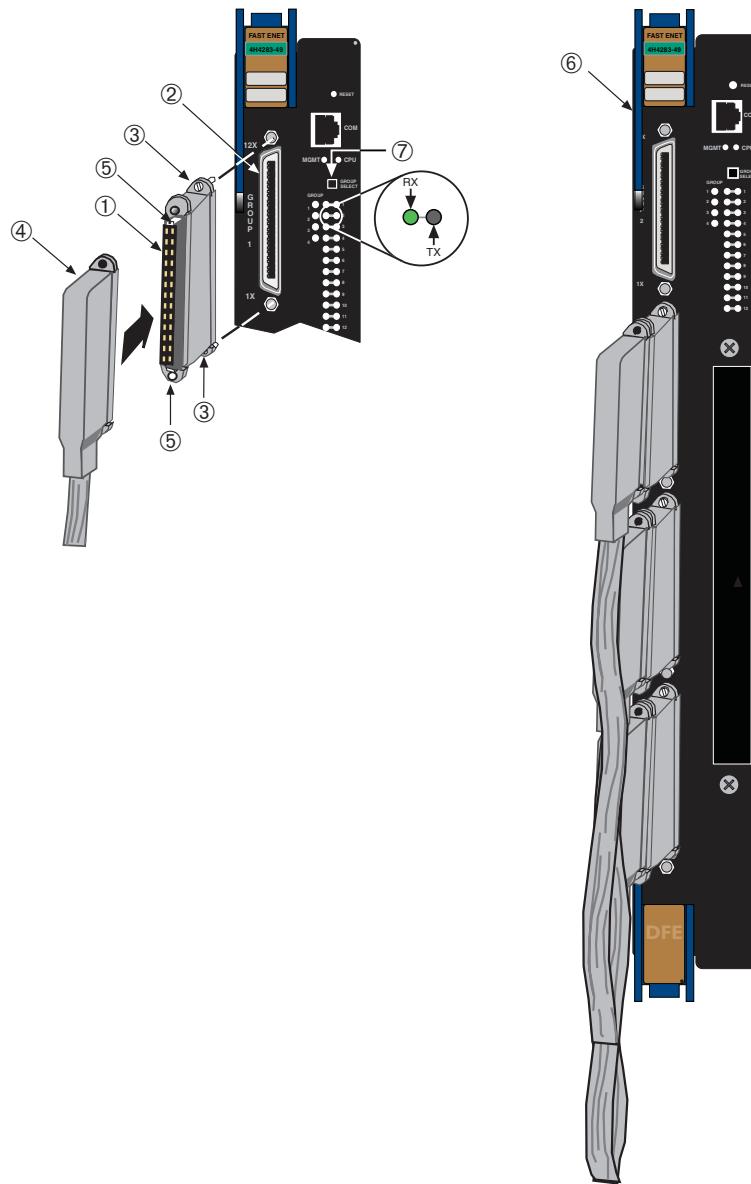
- a. If using an optional RJ21 angle adapter available from Enterasys Networks, insert the angle adapter into the RJ21 port connector.
- b. Tighten the two screws to secure the RJ21 angle adapter to the RJ21 port connector.
- c. Insert the RJ21 right-angled connector into the RJ21 angle adapter until the two retaining clips snap into place. The RJ21 angle adapter allows the cables to be positioned along the front panel of the device when using a right-angle RJ21 connector.



Note: The cable pinouts for a 25-pair cable (RJ21) can be found in the *Cabling Guide*. Refer to “[Related Documents](#)” on page xv for details on how to obtain this document.

- d. Proceed to [step 4](#).

Figure 3-14 Connection Using Optional RJ21 Angle Adapter



- 1 RJ21 angle adapter
- 2 RJ21 port connector
- 3 Retaining screws
- 4 RJ21 right-angled connector
- 5 Retaining clips
- 6 GROUP SELECT button
- 7 Example showing how multiple cables would be arranged along the front panel.

4. Verify that a link exists by checking that the port RX (Receive) LED is ON (flashing amber, blinking green, or solid green). If the RX LED is OFF and the TX (Transmit) LED is not blinking amber, perform the following steps until it is on:
 - a. To view the receive and transmit activity on a group of segments, press the GROUP SELECT button to step to the group of interest (Groups 1 through 4). Each time the GROUP SELECT button is pressed, the GROUP LED lights up in sequence, indicating which Group is selected. The receive and transmit activity for that group of segments is then indicated by the RX and TX LEDs for each segment.
 - b. Verify that the cabling being used is Category 5 UTP with an impedance between 85 and 111 ohms. If the port is to operate at 100 Mbps, category 5 cabling must be used.
 - c. Verify that the device at the other end of the twisted pair segment is on and properly connected to the segment.
 - d. Verify that the RJ21 connector on the twisted pair segment has the proper pinouts and check the cable for continuity.
 - e. Check that the twisted pair connection meets the specifications in the *Cabling Guide*.

If a link is not established, contact Enterasys Networks. Refer to “[Getting Help](#)” on page 1-10 for details.

5. Repeat all the steps above until all RJ21 connections are made.

Connecting Fiber-Optic Cables to 4H4284-49

This section provides the procedures to connect fiber-optic cables from the 100BASE-FX, MT-RJ front panel ports of the 4H4284-49 to the network or other devices. Each fiber-optic link consists of two fiber-optic strands within the cable: Transmit (TX) and Receive (RX).

The transmit strand from a DFE-Gold module port connects to the receive port of a fiber-optic 100BASE-FX Ethernet device at the other end of the segment. The receive strand of the applicable MT-RJ port on the DFE-Gold module connects to the transmit port of the fiber-optic 100BASE-FX Ethernet device.



Note: An odd number of crossovers (preferably one) must be maintained between devices so that the transmit port is connected to the receive port of the other device and vice versa.

To connect a fiber-optic cable segment to the module, refer to [Figure 3-15](#) and proceed as follows:

1. Remove the protective covers (not shown) from the MT-RJ front panel connector and from the connectors on each end of the cable.



Note: Leave the protective covers in place when the connectors are not in use to prevent contamination.



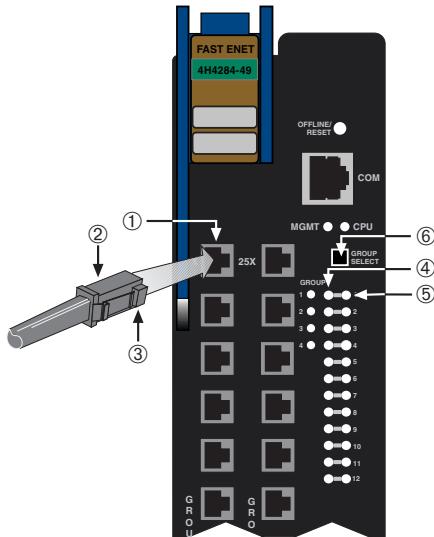
Caution: Do not touch the ends of the fiber-optic strands, and do not let the ends come in contact with dust, dirt, or other contaminants. Contamination of cable ends causes problems in data transmissions. If the ends of the fiber-optic strands become contaminated, use a canned duster to blow the surfaces clean. A cleaning swab saturated with optical-grade isopropyl alcohol may also be used to clean the ends.

2. Insert the MT-RJ cable connector into the MT-RJ front panel connector until it clicks into place.



Note: To remove the MT-RJ cable connector, press on its release tab and pull it out of the Mini-GBIC.

Figure 3-15 Connecting a Fiber-Optic Segment to the MT-RJ Front Panel Connector



1 MT-RJ front panel connector
2 MT-RJ cable connector
3 Release tab

4 Receive LED (RX)
5 Transmit LED (TX)
6 GROUP SELECT switch

1. Verify that a link exists by checking that the port RX LED is ON (flashing amber, blinking green, or solid green). If the RX LED is OFF and the TX LED is not blinking amber, perform the following steps until it is on:
 - a. To view the receive and transmit activity on a group of segments, press the GROUP SELECT switch (see [Figure 3-15](#)) to step to the appropriate group. Each time the GROUP SELECT switch is pressed, the GROUP LED lights up in sequence, indicating which Group is selected. On the 4H4284-49, you can step to 1, 2, 3, or 4 for Groups 1 through 4. The receive and transmit activity for that group of segments is then indicated by the RX and TX LEDs for each segment.
 - b. If there are separate fiber-optic connections on the other device, check the crossover of the cables. Swap the cable connections if necessary.
 - c. Verify that the fiber connection meets the dB loss and cable specifications for multimode cabling, as outlined in the *Cabling Guide*.

If a link is not established, see [Chapter 4](#) for troubleshooting information before contacting Enterasys Networks. To contact Enterasys Networks, refer to “[Getting Help](#)” on page 1-10 for details.

Connecting Fiber-Optic Cables to 7G-6MGBIC

This section provides the procedure for connecting 1-Gigabit Ethernet fiber-optic segments from the network or other devices to Mini-GBIC MT-RJ or LC port connectors installed in the optional 7G-6MGBIC interface. An MT-RJ connector is shown in [Figure 3-16](#) and an LC connector is shown in [Figure 3-17](#).

Each fiber-optic link consists of two fiber-optic strands within the cable: Transmit (TX) and Receive (RX).

The transmit strand from an MT-RJ port on the DFE-Gold module interface connects to the receive port of a fiber-optic Gigabit Ethernet device at the other end of the segment. The receive strand connects to the transmit port of the fiber-optic Gigabit Ethernet device.

The following procedure describes how to connect an MT-RJ cable connector ([Figure 3-16](#)) to a Mini-GBIC port connector. This procedure also applies to an LC cable connector shown in [Figure 3-17](#). Refer to [Figure 3-16](#) as an example and proceed as follows:

1. Remove the protective covers (not shown) from the MT-RJ fiber-optic port on the Mini-GBIC and from the connectors on each end of the cable.



Note: Leave the protective covers in place when the connectors are not in use to prevent contamination.



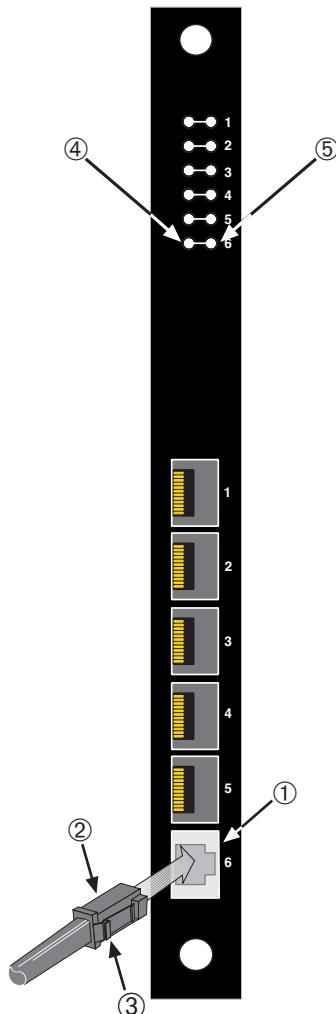
Caution: Do not touch the ends of the fiber-optic strands, and do not let the ends come in contact with dust, dirt, or other contaminants. Contamination of cable ends causes problems in data transmissions. If the ends of the fiber-optic strands become contaminated, use a canned duster to blow the surfaces clean. A cleaning swab saturated with optical-grade isopropyl alcohol may also be used to clean the ends.

2. Insert the MT-RJ cable connector into the Mini-GBIC until it clicks into place.



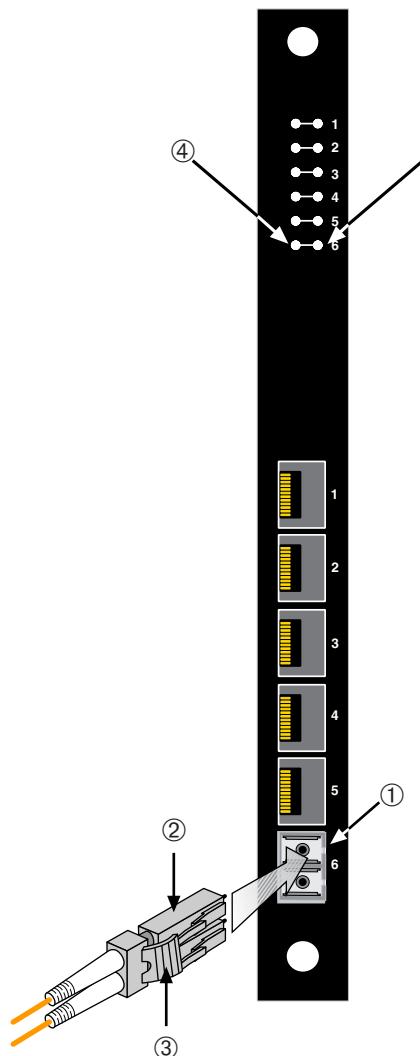
Note: To remove the MT-RJ cable connector, press on its release tab and pull it out of the Mini-GBIC connector.

Figure 3-16 Cable Connection to MT-RJ Fiber-Optic Connectors



- 1 Installed Mini-GBIC MT-RJ connector
- 2 MT-RJ cable connector
- 3 Release tab

- 4 Receive LED (RX)
- 5 Transmit LED (TX)

Figure 3-17 Cable Connection to LC Fiber-Optic Connectors

- 1** Installed Mini-GBIC LC connector
- 2** LC cable connector
- 3** Release tab

- 4** Receive LED (RX)
- 5** Transmit LED (TX)

3. Verify that a link exists by checking that the port RX LED is on (flashing amber, blinking green, or solid green). If the RX LED is off, perform the following steps until it is on:
 - a. Verify that the device at the other end of the segment is ON and connected to the segment.
 - b. If there are separate fiber-optic connections on the other device, check the crossover of the cables. Swap the cable connections if necessary.
 - c. Check that the fiber-optic connection meets the dB loss and cable specifications outlined in the *Cabling Guide* for multimode fiber-optic cabling. To obtain this document, refer to “[Related Documents](#)” on page xv.

If a link has not been established, refer to [Chapter 4](#) for LED troubleshooting details. If a problem persists, refer to “[Getting Help](#)” on page 1-10 for details on contacting Enterasys Networks for support.

4. Repeat steps 1 through 3, above, until all connections have been made.
5. Plug the other end of the cable into the appropriate port on the other device. Some cables may be terminated at the other end with two separate connectors, one for each fiber-optic strand. In this case, ensure that the transmit fiber-optic strand is connected to the receive port and the receive fiber-optic strand to the transmit port.

Connecting to COM Port for Local Management

This section describes how to install a UTP straight-through cable with RJ45 connectors and optional adapters to connect a PC, a VT series terminal, or a modem to an Enterasys Networks module to access Local Management. This section also provides the pinout assignments of the adapters.



Note: The RJ45 COM port connector is located in approximately the same location on all DFE-Gold modules. In the following procedures, the 4H4282-49 COM port is shown as an example in the figures associated with each procedure.

What Is Needed

The following is a list of the user-supplied parts that may be needed depending on the connection:

- RJ45-to-DB9 female adapter
- UTP straight-through cable with RJ45 connectors
- RJ45-to-DB25 female adapter
- RJ45-to-DB25 male adapter

With a UTP straight-through cable with RJ45 connectors and RJ45-to-DB9 adapter, you can connect products equipped with an RJ45 COM port to an IBM or compatible PC running a VT series emulation software package.

With a UTP straight-through cable and RJ45-to-DB25 female adapter, you can connect products equipped with an RJ45 COM port to a VT series terminal or VT type terminals running emulation programs for the VT series.

With a UTP straight-through cable and an RJ45-to-DB25 male adapter, you can connect products equipped with an RJ45 COM port to a Hayes compatible modem that supports 9600 baud.

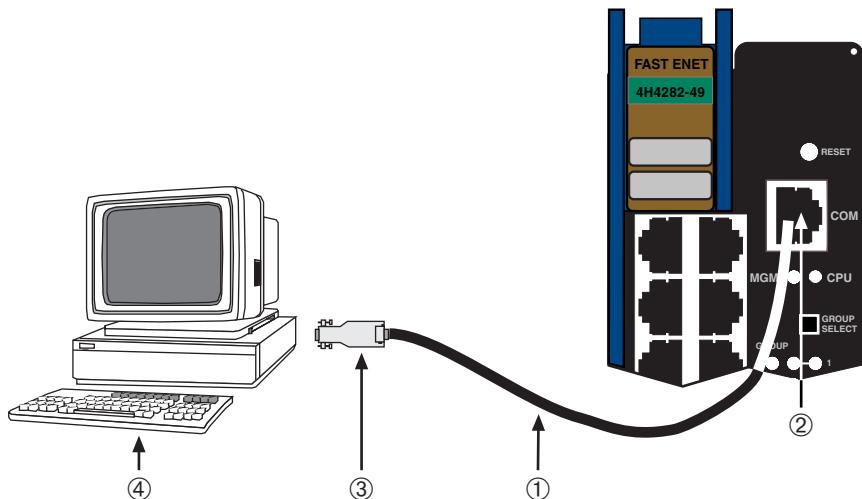
Connecting to an IBM PC or Compatible Device

To connect an IBM PC or compatible device, running the VT terminal emulation, to an Enterasys Networks module COM port ([Figure 3-18](#)), proceed as follows:

1. Connect the RJ45 connector at one end of a UTP straight-through cable to the communications COM port on the Enterasys Networks module. (The COM port is also known as a Console port.)
2. Plug the RJ45 connector at the other end of the UTP straight-through cable into an RJ45-to-DB9 adapter.
3. Connect the RJ45-to-DB9 adapter to the communications port on the IBM PC.
4. Turn on the PC and configure your VT emulation package with the following parameters:

Parameter	Setting
Mode	7 Bit Control
Transmit	Transmit=9600
Bits Parity	8 Bits, No Parity
Stop Bit	1 Stop Bit

5. When these parameters are set, the Local Management password screen will display. Refer to the appropriate *Matrix DFE-Gold Series Configuration Guide* for further information.

Figure 3-18 Connecting an IBM PC or Compatible

1 UTP straight-through cable with RJ45 connectors
2 RJ45 COM port

3 RJ45-to-DB9 PC adapter
4 IBM PC or compatible device

Connecting to a VT Series Terminal

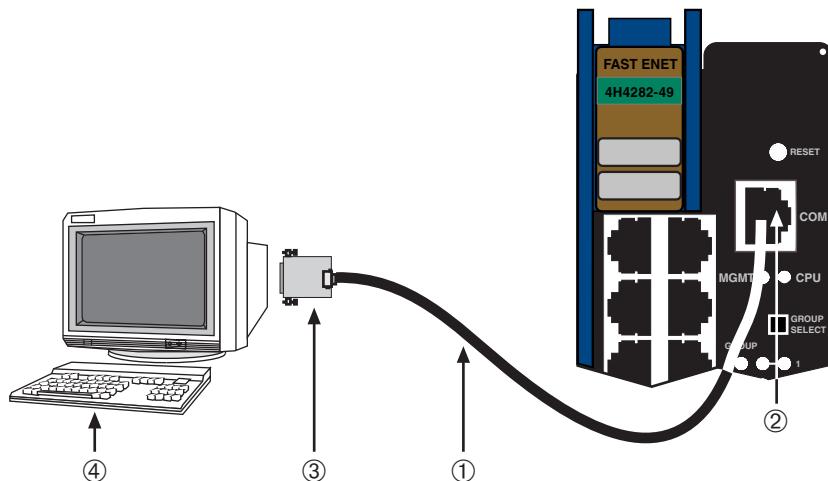
To connect a VT Series terminal to an Enterasys Networks DFE-Gold module COM port ([Figure 3-19](#)), use a UTP straight-through cable with RJ45 connectors and an RJ45-to-DB25 female adapter, and proceed as follows:

1. Connect the RJ45 connector at one end of the UTP straight-through cable to the COM port on the Enterasys Networks module.
2. Plug the RJ45 connector at the other end of the UTP straight-through cable into the RJ45-to-DB25 female adapter.
3. Connect the RJ45-to-DB25 adapter to the port labeled COMM on the VT terminal.
4. Turn on the terminal and access the Setup Directory. Set the following parameters on your terminal:

Parameter	Setting
Mode	7 Bit Control
Transmit	Transmit=9600
Bits Parity	8 Bits, No Parity
Stop Bit	1 Stop Bit

When these parameters are set, the Local Management password screen will display. Refer to the *Matrix DFE-Gold Series Configuration Guide* for further information.

Figure 3-19 Connecting a VT Series Terminal



1 UTP straight-through cable with RJ45 connectors 2 RJ45 COM port	3 RJ45-to-DB25 VT adapter 4 VT series terminal
--	---

Connecting to a Modem

To connect a modem to an Enterasys Networks DFE-Gold module COM port ([Figure 3-20](#)), use a UTP straight-through cable with RJ45 connectors and an RJ45-to-DB25 male adapter, and proceed as follows:

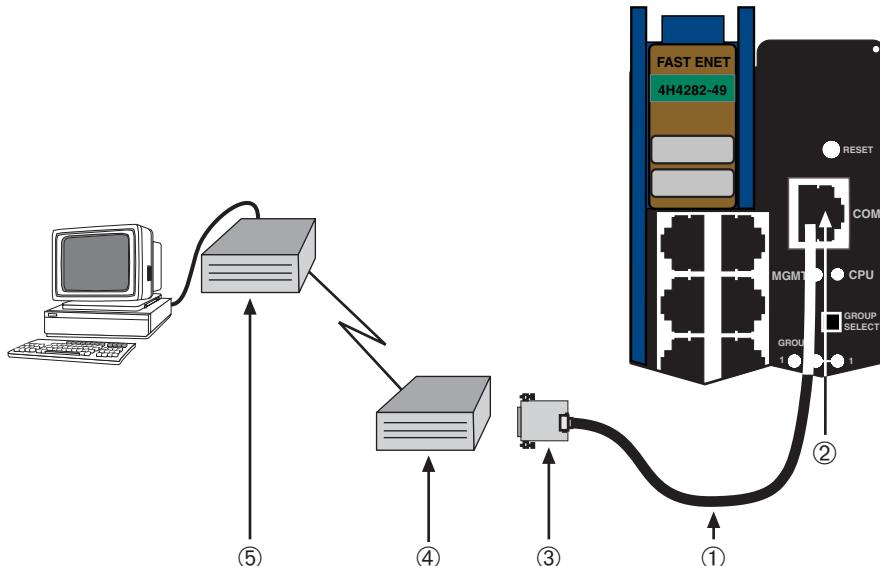
1. Connect the RJ45 connector at one end of the UTP straight-through cable to the COM port of the DFE-Gold module.
2. Plug the RJ45 connector at the other end of the UTP straight-through cable into the RJ45-to-DB25 modem adapter.
3. Connect the RJ45-to-DB25 adapter to the communications port on the modem.
4. Turn on the modem.

5. With a PC connected to a remote modem, you can configure the switch remotely. To accomplish this, you must configure your PC VT emulation package with the following parameters.

Parameter	Setting
Mode	7 Bit Control
Transmit	Transmit=9600
Bits Parity	8 Bits, No Parity
Stop Bit	1 Stop Bit

6. When these parameters are set, the Local Management password screen will display. Refer to the *Matrix DFE-Gold Series Configuration Guide* for further information.

Figure 3-20 Connecting to a Modem



1 UTP straight-through cable with RJ45 connectors

2 RJ45 COM port

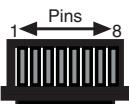
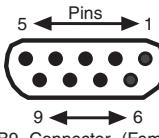
3 RJ45-to-DB25 modem adapter

4 Local modem

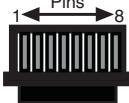
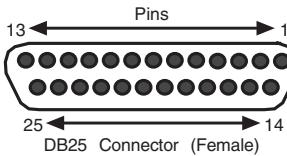
5 Remote modem

Adapter Wiring and Signal Assignments

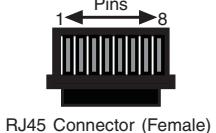
COM Port Adapter Wiring and Signal Diagram			
RJ45		DB9	
Pin	Conductor	Pin	Signal
1	Blue	2	Receive (RX)
4	Red	3	Transmit (TX)
5	Green	5	Ground (GRD)
2	Orange	7	Request to Send (RTS)
6	Yellow	8	Clear to Send (CTS)

 RJ45 Connector (Female)	 DB9 Connector (Female)
--	--

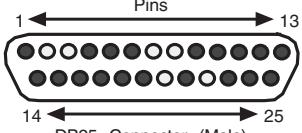
VT Series Port Adapter Wiring and Signal Diagram			
RJ45		DB25	
Pin	Conductor	Pin	Signal
4	Red	2	Transmit (TX)
1	Blue	3	Receive (RX)
6	Yellow	5	Clear to Send (CTS)
5	Green	7	Ground (GRD)
2	Orange	20	Data Terminal Ready

 RJ45 Connector (Female)	 DB25 Connector (Female)
--	---

Modem Port Adapter Wiring and Signal Diagram			
RJ45		DB25	
Pin	Conductor	Pin	Signal
1	Blue	2	Transmit (TX)
2	Orange	8	Data Carrier Detect (DCD)
4	Red	3	Receive
5	Green	7	Ground (GRD)
6	Yellow	20	Data Terminal Ready (DTR)
8	Gray	22	Ring Indicator



RJ45 Connector (Female)



DB25 Connector (Male)

Completing the Installation

Completing the DFE module installation depends on if the module is being installed in:

- a new DFE module system (refer to “[Completing the Installation](#)” on page 3-32), or
- an established, operating DFE module system (refer to “[Completing the Installation of a DFE-Gold Module in an Existing System](#)” on page 3-34).

Completing the Installation of a New System

In a new system of DFE modules, one of the installed DFE modules will become the management module on chassis power up, and all DFE modules will automatically be set to the factory default values. A complete list of the factory default values are provided in Chapter 3 of the *Matrix DFE-Gold Series Configuration Guide*.

After installing all DFE-Gold modules into the host chassis and making the connections to the network, proceed to “[First-Time Log-In Using a Console Port Connection](#)” on page 3-33 to access the module management startup screen from your PC, terminal, or modem connection.

First-Time Log-In Using a Console Port Connection



Note: This procedure applies only to initial log-in, and to logging in to a device not yet configured with administratively-supplied user and password settings.

By default, the Matrix DFE Series device is configured with three user login accounts: **ro** for Read-Only access; **rw** for Read-Write access; and **admin** for super-user access to all modifiable parameters. The default password is set to blank (carriage return). For information on changing these default passwords, refer to Chapter 3 in the *Matrix DFE-Gold Series Configuration Guide*.

Start the Command Line Interface (CLI) from the module's local console port as follows:

1. Connect a terminal to the local console port as described in “[Connecting to COM Port for Local Management](#)” on page 3-26. The startup screen, [Figure 3-21](#), displays.
2. At the login prompt, enter one of the following default user names:
 - **ro** for Read-Only access,
 - **rw** for Read-Write access, or
 - **admin** for Super User access. (This access level allows Read-Write access to all modifiable parameters, including user accounts.)
3. Press ENTER.
4. The Password prompt displays. Leave this string blank and press ENTER. The module information and Matrix prompt displays as shown in [Figure 3-21](#).

The DFE-Gold module is now ready to be configured. For information about setting the IP address and configuring Telnet settings for remote access to DFE management, refer to Chapter 3 in the *Matrix DFE-Gold Series Configuration Guide*. The CLI commands enable you to initially set up and perform more involved management configurations.

The *Matrix DFE-Gold Series Configuration Guide* is available online at:

<http://www.enterasys.com/support/manuals>

If you require assistance, contact Enterasys Networks using one of the methods described in “[Getting Help](#)” on page 1-10.

Figure 3-21 Matrix DFE Startup Screen Example (N7 Chassis)

```
login: admin
Password:

M A T R I X N7 GOLD
Command Line Interface

Enterasys Networks, Inc.
50 Minuteman Rd.
Andover, MA 01810-1008 U.S.A.

Phone: +1 978 684 1000
E-mail: support@enterasys.com
WWW: http://www.enterasys.com

(c) Copyright Enterasys Networks, Inc. 2003

Chassis Serial Number: xxxxxxxxxxxxxxxx
Chassis Firmware Revision: xx.xx.xx

Matrix N7(su)->
```

Completing the Installation of a DFE-Gold Module in an Existing System

In an established DFE-Gold module system,

- a DFE-Gold module is already established as the management module,
- the passwords have already been set for various users,
- the system IP address is set, and
- other system parameters have been set.

When you install a new DFE-Gold module into a system with an existing configured user account, the current system settings in that account are already recognized by the new DFE-Gold module and it will operate accordingly.

If you need to change any settings, you can connect a terminal to the local console port as described in “[Connecting to COM Port for Local Management](#)” on page 3-26 to access system management, or use a Telnet connection to access the DFE-Gold module system management as described in Chapter 3 of the *Matrix DFE-Gold Series Configuration Guide*.

Logging in with an Administratively-Configured User Account

If the device's default user account settings have been changed, proceed as follows:

1. At the login prompt, enter your administratively-assigned user name and press ENTER.
2. At the Password prompt, enter your password and press ENTER.

The notice of authorization and the Matrix prompt displays as shown back in [Figure 3-21](#).



Note: Users with Read-Write (rw) and Read-Only access can use the **set password** command to change their own passwords. Administrators with Super User (su) access can use the **set system login** command to create and change user accounts, and the **set password** command to change any local account password. For information on the set password and set system login commands, refer to Chapter 3 in the *Matrix DFE-Gold Series Configuration Guide*.

The DFE-Gold module is now ready to be configured. For information about setting the IP address and configuring Telnet settings for remote access to DFE management, refer to Chapter 3 in the *Matrix DFE-Gold Series Configuration Guide*. The CLI commands enable you to initially set up and perform more involved management configurations.

The *Matrix DFE-Gold Series Configuration Guide* is available online at:

<http://www.enterasys.com/support/manuals>

If you require assistance, contact Enterasys Networks using one of the methods described in ["Getting Help"](#) on page 1-10.

4

Troubleshooting

This chapter provides information concerning the following:

- [Using LANVIEW](#) (page 4-1)
- [Troubleshooting Checklist](#) (page 4-7)
- [Overview of DFE-Gold Module Shutdown Procedure \(Special Instructions\)](#) (page 4-9)
- [Recommended Shutdown Procedure Using OFFLINE/RESET Switch](#) (page 4-10)
- [Last Resort Shutdown Procedure Using OFFLINE/RESET Switch](#) (page 4-10)

Unless otherwise noted, the following information applies to all DFE-Gold modules.

Using LANVIEW

The modules use a built-in visual diagnostic and status monitoring system called LANVIEW. The LANVIEW LEDs ([Figure 4-1](#)) allow quick observation of the network status to aid in diagnosing network problems.

About the Management (MGMT) LED

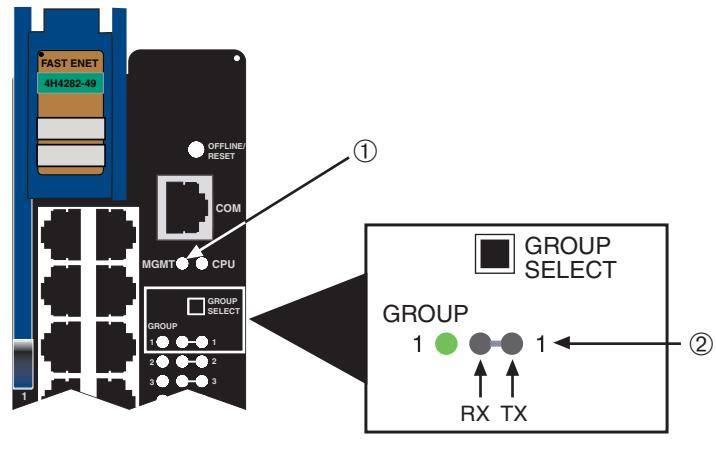
The MGMT LED (shown in [Figure 4-1](#)) indicates when the module is serving as the Management Module to control the management functions for all DFE-Gold modules in the chassis. The Management Module handles all IP requests to the chassis IP address, such as PING, Telnet, SNMP, HTTP, etc. The Management Module also handles the CLI configuration sessions through the console port. So, when you plug into a DFE-Gold module COM port to configure a DFE-Gold module in the chassis, it is handled by the Management Module regardless of the DFE-Gold module COM port that you use.

Viewing Receive/Transmit Activity on 4H4282-49, 4H4283-49, and 4H4203-72

On the 4H4282-49, 4H4283-49, and 4H4203-72 you can view the receive and transmit activity on the RX and TX LEDs. However, only one group of 12 ports may be viewed at a time.

To view the receive and transmit activity on a group of attached segments, press the GROUP SELECT button (see [Figure 4-1](#)) to step to the group of interest (Groups 1 through 4). Each time the GROUP SELECT button is pressed, the GROUP LED lights up in sequence, indicating which group is selected. The receive and transmit activity for that group of segments is then indicated by the RX and TX LEDs for each port.

Figure 4-1 LANVIEW LEDs on 4H4282-49, 4H4283-49, and 4H4203-72



1 MGMT LED

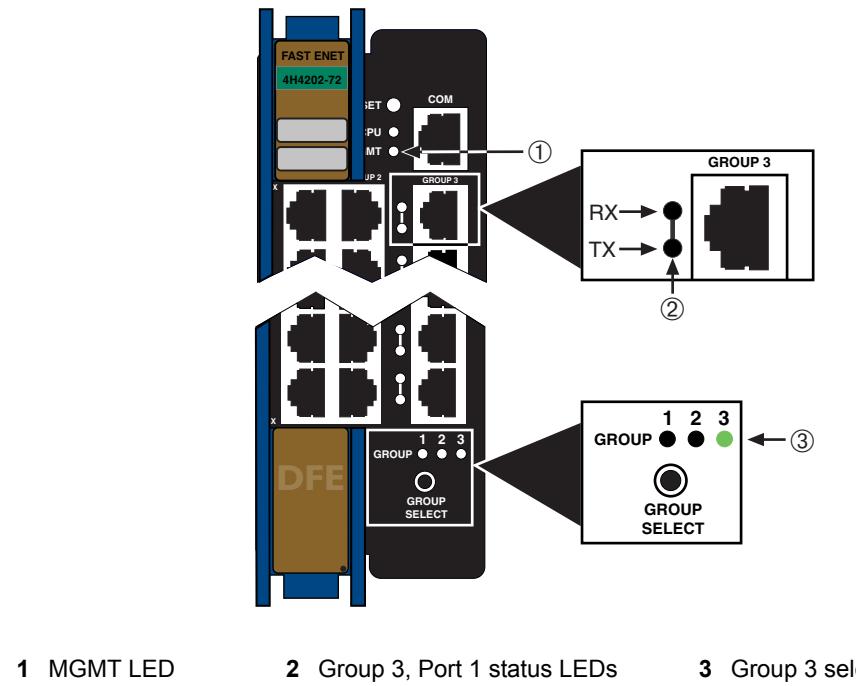
2 Group 1, Port 1 status LEDs

Viewing Receive/Transmit Activity on 4H4202-72

On the 4H4202-72, you can view the receive and transmit activity on the RX and TX LEDs. However, only one group of 24 ports may be viewed at a time.

To view the receive and transmit activity on a group of attached segments, press the GROUP SELECT button (see [Figure 4-2](#)) to step to the group of interest (Groups 1 through 3). Each time the GROUP SELECT button is pressed, a GROUP LED lights up in sequence, indicating which group is selected. The receive and transmit activity for that group of segments is then indicated by the RX and TX LEDs for each port. [Figure 4-2](#) shows Group 3 selected and the location of Group 3, port 1 RX and TX LEDs.

Figure 4-2 LANVIEW LEDs on 4H4202-72

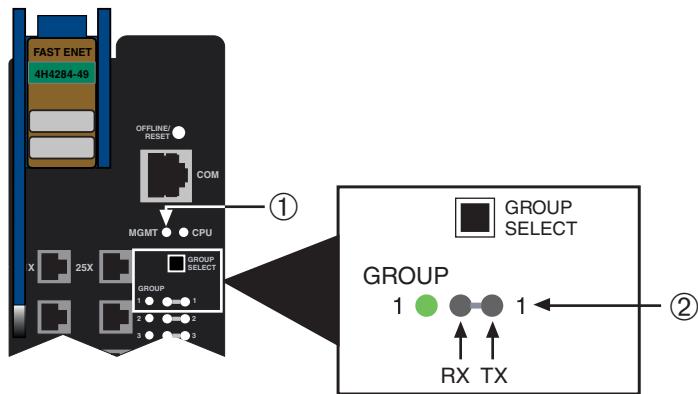


Viewing the Receive and Transmit Activity on 4H4284-49

On the 4H4284-49 DFE-Gold module, you can view the receive and transmit activity on the RX and TX LEDs. However, only one group of 12 ports may be viewed at a time on the 4H4284-49.

To view the receive and transmit activity on a group of segments, press the GROUP SELECT button (see [Figure 4-3](#)) to step to the group of interest (Groups 1 through 4). Each time the GROUP SELECT button is pressed, the GROUP LED lights up in sequence, indicating which group is selected. The receive and transmit activity for that group of segments is then indicated by the RX and TX LEDs for each port.

Figure 4-3 LANVIEW LEDs on 4H4284-49



1 MGMT LED

2 Group 1, Port 1 status LEDs

[Table 4-1](#) describes the LED indications and provides recommended actions as appropriate.



Note: The terms **flashing**, **blinking**, **solid**, and **Alternately** used in [Table 4-1](#) indicate the following:

Flashing indicates an LED is flashing randomly.

Blinking indicates an LED is flashing at a steady rate (approximately 50% on, 50% off).

Solid indicates a steady LED light. No pulsing.

Alternately indicates an LED is flashing at a steady rate other than 50% on, 50% off.

Table 4-1 LANVIEW LEDs

LED	Color	State	Recommended Action
MGMT	None	Off. This module is NOT the Management Module.	None.
	Green	Solid. This module is the designated Management Module.	None.
	Amber	Flashing. This is a temporary indication that the module is saving data.	None.
CPU	None	Power off.	Ensure chassis has adequate power.
	Amber	Blinking. Module in process of booting.	None.
		Solid. Testing.	If the LED remains amber for several minutes, contact Enterasys Networks for technical support.
	Green	Blinking. Image starts running.	None.
		Solid. Functional.	None.
	Red	Solid. Processor in reset.	None.
Green and Amber		Blinking. Indicates that the module is in the process of shutting down.	None. This state is activated when the OFFLINE/RESET switch is pressed for less than 1 second to start the process of an orderly shutdown. While in this state, do not remove any DFE-Gold module.
	Amber and Off	Alternately (67% on, 33% off). Indicates that a shutdown process has completed. This indication will remain for 60 seconds before automatically restarting.	While in this state, you have 60 seconds to safely remove the DFE-Gold module from the chassis.

Table 4-1 LANVIEW LEDs (continued)

LED	Color	State	Recommended Action
RX (Receive)	None	No link. No activity. Port enabled or disabled.	None.
	Green	Solid. Link present, port enabled, no traffic is being received by the interface.	None.
	Amber	Flashing. Link present, port enabled, traffic is being received by the interface. Rate of flashing indicates the data transmission rate.	None.
	Red	Flashing. Fault or Error (collision).	Contact Enterasys Networks for technical support.
TX (Transmit)	None	Port enabled, but no activity.	If it is known that the port should be active and is not, contact Enterasys Networks for technical support.
	Green	Flashing. Indicates data transmission activity. Rate of flashing indicates the data rate.	None.
	Red	Blinking. Indicates collisions. This indication is only supported on 10/100 ports.	None, unless there is a high rate of activity. In this case, check for network configuration problems or a defective device.

Troubleshooting Checklist

If the module is not working properly, refer to [Table 4-1](#) for a checklist of problems, possible causes, and recommended actions to resolve the problem.

Table 4-1 Troubleshooting Checklist

Problem	Possible Cause	Recommended Action
All LEDs are OFF.	Loss of power.	Ensure that the module was installed properly according to the installation instructions in Chapter 3 , and that the host chassis is providing power.
No Local Management Password screen.	Incorrect terminal setup.	Refer to the <i>Matrix DFE-Gold Series Configuration Guide</i> for proper setup procedures.
	Improper console cable pinouts.	Refer to Appendix A for proper COM port pinouts.
	Corrupt firmware image, or hardware fault.	If possible, attempt to download the image to the module again. Refer to the section, “ Setting the Mode Switches ,” on page B-2 for instructions to clear NVRAM.
Cannot navigate beyond Password screen.	Improper username/password combination entered.	If the username/password combination has been forgotten, refer to the section, “ Setting the Mode Switches ,” on page B-2 for instructions on how to set the mode switch to reset the username/password combination to the default values.
Cannot contact the module through in-band management.	IP address not assigned.	Refer to the <i>Matrix DFE-Gold Series Configuration Guide</i> for the IP address assignment procedure.
	Port is disabled.	Enable port. Refer to the <i>Matrix DFE-Gold Series Configuration Guide</i> for instructions to enable/disable ports.
	Host Port policy and/or management VLAN is incorrectly configured, or not configured.	Verify that a management VLAN exists and that it is associated with the Host Port. Refer to the <i>Matrix DFE-Gold Series Configuration Guide</i> for information about Host Port and management VLAN configuration.
	No link to device.	Verify that all network connections between the network management station and the module are valid and operating. If the problem continues, contact Enterasys Networks for technical support.

Table 4-1 Troubleshooting Checklist (continued)

Problem	Possible Cause	Recommended Action
Port(s) goes into standby for no apparent reason.	Loop condition detected.	Verify that Spanning Tree is enabled. Refer to the <i>Matrix DFE-Gold Series Configuration Guide</i> for the instructions to set the type of STA. Review the network design and delete unnecessary loops. If the problem continues, contact Enterasys Networks for technical support.
User parameters (IP address, device and module name, etc.) were lost when the module power was cycled, the front panel OFFLINE/RESET switch was pressed.	Position of Mode switch (7), Persistent Data Reset, was changed sometime before either cycling power or pressing the OFFLINE/RESET switch, causing the user-entered parameters to reset to factory default settings. Clear Persistent Data was set through Local Management. The module was moved either from slot-to-slot or from chassis-to-chassis.	Reenter the lost parameters as necessary. Refer to the <i>Matrix DFE-Gold Series Configuration Guide</i> for the instructions to configure the device. If the problem continues, contact Enterasys Networks for technical support.

Overview of DFE-Gold Module Shutdown Procedure (Special Instructions)



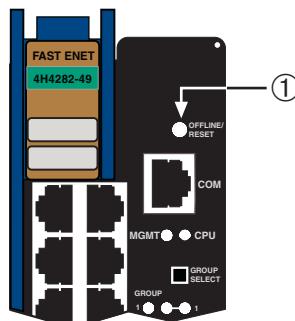
Caution: Do not remove a DFE module from an operating chassis system before reading the following information and instructions.

The DFE-Gold modules installed in a Matrix N3 or Matrix N7 chassis are interdependent and operate under a single IP address as a single, distributed switch system (hardware, databases, and persistent storage). In this operating environment, the DFE-Gold module must shut down in an orderly fashion to ensure that the other modules in the system and other devices on the network are notified of the impending change. The device(s) can then make intelligent decisions and stabilize the network before the change is made; thereby increasing network availability.

You can shut down a DFE-Gold module in an operating system using the OFFLINE/RESET switch shown in [Figure 4-4](#). There are two procedures to shut down a DFE-Gold module.

- Recommended shutdown procedure (page 4-10)
- Last resort shutdown procedure (not recommended) (page 4-10)

Figure 4-4 OFFLINE/RESET Switch



1 OFFLINE/RESET switch (in similar location on all modules)

Recommended Shutdown Procedure Using OFFLINE/RESET Switch



Caution: Do not pull any DFE-Gold module out of an operating chassis before it has completed its shutdown routine.

Before pulling a DFE-Gold module out of a chassis,

press or tap on its OFFLINE/RESET switch for less than 1 second.

Its CPU LED changes from solid green to blinking between green and amber, indicating that the module is shutting down. At the end of the shutdown routine, the CPU LED changes to a 67%/33% sequence of amber/off, respectively, indicating the module is in a halt state. In this time it is safe to restart or remove the module from the chassis.

When a controlled shutdown is initiated from the OFFLINE/RESET switch, you have 60 seconds from the time the CPU starts alternately flashing amber/off until the device automatically restarts.



Note: The only safe time to pull a DFE-Gold module out of the chassis is when the CPU LED is alternately flashing amber/off. Otherwise, system operation will be interrupted.

Last Resort Shutdown Procedure Using OFFLINE/RESET Switch



Caution: This method of shutting down a DFE-Gold module is not recommended except as a last resort, because all processes currently running on the module will be interrupted resulting in loss of frames.

To reset a DFE-Gold module without it performing an orderly shutdown routine,

press and hold the OFFLINE/RESET switch for approximately 6 seconds.

Pulling any DFE-Gold module out of the chassis before it has been shut down is not recommended. The only safe time to pull a module out of the chassis is after the completion of a shutdown and the management LED is alternately flashing amber/off.

A

Specifications

This appendix provides information about the following:

- [DFE-Gold Module Specifications](#) (page A-1)
- [Ethernet Interface Module Specifications](#) (page A-3)
- [Mini-GBIC Input/Output Specifications](#) (page A-4)
- [Gigabit Ethernet Specifications](#) (page A-4)
- [COM Port Pinout Assignments](#) (page A-7)
- [Regulatory Compliance](#) (page A-8)

Enterasys Networks reserves the right to change the specifications at any time without notice.

DFE-Gold Module Specifications

Table A-1 provides the I/O ports, processors and memory, physical, and environmental module specifications for DFE-Gold modules, 4H4282-49, 4H4283-49, 4H4203-72, 4H4202-72, and 4H4284-49. Unless noted differently, the specifications apply to all five DFE-Gold modules.

Table A-1 Specifications

Item	Specification
4H4282-49	
Ports 1 through 48	Forty-eight, 10BASE-T/100BASE-TX compliant ports through 48, RJ45 connectors.
Port Interface Option Slot	Supports one optional Ethernet interface module.

Table A-1 Specifications (continued)

Item	Specification
4H4283-49	
Ports 1 through 48	Forty-eight, 10BASE-T/100BASE-TX compliant ports through 4, RJ21 connectors.
Port Interface Option Slot	Supports one optional Ethernet interface module.
4H4203-72	
Ports 1 through 72	Seventy-two, 10BASE-T/100BASE-TX compliant ports through six RJ21 connectors.
4H4202-72	
Ports 1 through 72	Seventy-two, 10BASE-T/100BASE-TX compliant ports through 72 RJ45 connectors.
4H4284-49	
Ports 1 through 48	Forty-eight, 100BASE-FX multimode fiber-optic compliant ports through 48, MT-RJ connectors.
Port Interface Option Slot	Supports one optional Ethernet interface module.
Chassis Backplane Connectivity	
E7, N3, and N7 Chassis FTM Backplane Support	FTM2 only
Processors/Memory	
Processor	MPC750CX, 400 MHz processor
Dynamic Random Access Memory (DRAM)	128 MB (not upgradeable on 4H4202-72)
FLASH Memory	32 MB (not upgradeable on 4H4202-72)
Physical	
Dimensions	46.43 H x 6.05 W x 29.51 D (cm) 18.28 H x 2.38 W x 11.62 D (in.)
Approximate Weight (4H4282-49, 4H4283-49, 4H4203-72, 4H4284-49)	Gross: 5.54 kg (12.0 lb) (shipping carton containing one module) Net: 4.10 kg (9.0 lb) (one module without packaging)
Approximate Weight (4H4202-72)	Gross: 6.36 kg (14.0 lb) (shipping carton containing one module) Net: 5.45 kg (12.0 lb) (one module without packaging)

Table A-1 Specifications (continued)

Item	Specification
Predicted hours for Mean Time Between Failures (MTBF) for: 4H4282-49, 4H4283-49, 4H4203-72, 4H4202-72, 4H4284-49	For the MTBF hours for these products, refer to the MTBF web site at URL http://www.enterasys.com/support/mtbf/
Environmental	
Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-30°C to 73°C (-22°F to 164°F)
Operating Relative Humidity	5% to 90% (non-condensing)

Ethernet Interface Module Specifications

At the time of the printing of this manual, two interface modules (7G-6MGBIC and 7G-6MGBIC-A) are available from Enterasys Networks. Refer to [Table A-2](#) for specifications.

Table A-2 7G-6MGBIC and 7G-6MGBIC-A Port/Environmental Specifications

Item	Specification
Port slots 1 through 6	Supports up to six optional 1000BASE-SX, 1000BASE-LX, and 1000BASE-T compliant Mini-GBICs. Refer to "Mini-GBIC Input/Output Specifications" (page A-4) for the supported Mini-GBICs.
Physical	
Dimensions	4.34 H x 21.97 W x 18.85 D (cm) 1.71 H x 8.65 W x 7.42 D (in.)
Approximate Weight	Net: 0.68 kg (1.5 lb) (one module without packaging)
MTBF (calculated hours)	575,333.00
Environmental	
Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-30°C to 73°C (-22°F to 164°F)
Operating Relative Humidity	5% to 90% (non-condensing)

Mini-GBIC Input/Output Specifications

The Mini-Gigabit Ethernet Card (Mini-GBIC) port interface slots can support 1-Gbps fiber-optic and copper connections as described in [Table A-3](#). The optional Mini-GBICs are hot swappable.

Table A-3 Mini-GBIC Input/Output Port Specifications

Item	Specification
MGBIC-LC01	Provides one LC fiber-optic multimode port that is compliant with the 1000BASE-SX standard LC connector.
MGBIC-LC03	Provides one LC fiber-optic multimode port that is compliant with the 1000BASE-SX standard LC duplex style connector.
MGBIC-LC09	Provides one LC fiber-optic single-mode port that is compliant with the 1000BASE-LX standard LC connector.
MGBIC-MT01	Provides one MT-RJ fiber-optic multi-mode port that is compliant with the 1000BASE-SX standard MT-RJ connector.
MGBIC-08	Provides one LC fiber-optic single-mode port that is compliant with the 1000BASE-ELX standard LC connector.
MGBIC-02	Provides one RJ45 copper connection that is compliant with the 1000BASE-T standard RJ45 connector.

Gigabit Ethernet Specifications

The following specifications for the Mini-GBICs (shown in [Table A-4](#) through [Table A-12](#)) meet or exceed the IEEE 802.3z-1998 standard.

MGBIC-LC01 / MGBIC-MT01 Specifications (1000BASE-SX)

Table A-4 MGBIC-LC01 / MGBIC-MT01 Optical Specifications

Item	62.5 μ m MMF	50 μ m MMF
Transmit Power (minimum)	-9.5 dBm	-9.5 dBm
Receive Sensitivity	-17 dBm	-17 dBm
Link Power Budget	7.5 dBm	7.5 dBm

Table A-5 MGBIC-LC01 / MGBIC-MT01 Operating Range

Item	Modal Bandwidth @ 850 nm	Range
62.5 µm MMF	160 MHz/km	2-220 Meters
62.5 µm MMF	200 MHz/km	2-275 Meters
50 µm MMF	400 MHz/km	2-500 Meters
50 µm MMF	500 MHz/km	2-550 Meters

MGBIC-LC03 Specifications (1000BASE-SX)**Table A-6 MGBIC-LC03 Optical Specifications**

Item	62.5/125 µm MMF	50/125 µm MMF
Transmit Power (minimum)	-9.5 dBm	-9.5 dBm
Transmit Power (maximum)	-3 dBm	-3 dBm
Receive Sensitivity	-20 dBm	-20 dBm
Link Power Budget ¹ (Multimode Only)	10.5 dBm	10.5 dBm

1. The maximum drive distance (up to 2 km) depends on the quality of the installed multimode fiber-optic cable segment. Use the Link Power Budget to calculate the maximum cable length of the attached segment. The Link Power Budget must not exceed those specified in this table. The MGBIC-LC03 input power must not exceed -3 dBm. Otherwise, saturation could occur.

Table A-7 MGBIC-LC03 Operating Range

Item	Modal Bandwidth @ 1310 nm	Range
62.5 µm MMF	160 MHz/km	2,000 Meters
50 µm MMF	400 MHz/km	2,000 Meters

MGBIC-LC09 Specifications (1000BASE-LX)

Table A-8 MGBIC-LC09 Optical Specifications

Item	62.5 μ m MMF	50 μ m MMF	10 μ m SMF
Transmit Power (minimum)	-11.5 dBm	-11.5 dBm	-9.5 dBm
Receive Sensitivity	-20 dBm	-20 dBm	-20 dBm
Link Power Budget	8.5 dBm	8.5 dBm	10.5 dBm

Table A-9 MGBIC-LC09 Operating Range

Item	Modal Bandwidth @ 1300 nm	Range
62.5 μ m MMF	500 MHz/km	2-550 Meters
50 μ m MMF	400 MHz/km	2-550 Meters
50 μ m MMF	500 MHz/km	2-550 Meters
10 μ m SMF	N/A	2-10,000 Meters

MGBIC-08 Specifications (1000BASE-ELX)

Table A-10 MGBIC-08 Optical Specifications

Item			
Transmit Power (minimum)	-0 dBm, min.	+2 dBm, typical	+5 dBm, max.
Receive Sensitivity	-24 dBm, min.	-26 dBm, typical	
Maximum Input Power	-3 dBm		
Link Power Budget ¹ (Full Duplex Only)	23 dB	28 dB, typical	

1. The maximum drive distance (up to 70 km) depends on the quality of the installed single-mode fiber-optic cable segment. Use the Link Power Budget to calculate the maximum cable length of the attached segment. The Link Power Budget must not exceed those specified in this table. The MGBIC-08 input power must not exceed -3 dBm. Otherwise, saturation could occur.

Table A-11 MGBIC-08 Operating Range

Item	1550 nm	Range
9 or 10 µm SMF	N/A	70,000 Meters

MGBIC-02 Specifications (1000BASE-T)

Table A-12 MGBIC-02 Specifications

Item	Specification
Supported Cable Type	Copper, Category 5 UTP
Maximum Length	Up to 100 meters
Connector	RJ45
Data Rate	1 Gbps, IEEE 802.3:2000 compatible 1000BASE-T operation only Automatic crossover detection
TX Output impedance	100 ohms, typical at all frequencies between 1 MHz and 125 MHz
RX Input impedance	100 ohms, typical at all frequencies between 1 MHz and 125 MHz

COM Port Pinout Assignments

The COM port is a serial communications port for local access to Local Management. Refer to [Table A-13](#) for the COM port pin assignments.

Table A-13 COM Port Pin Assignments

Pin	Signal Name	Input/Output
1	Transmit Data (XMT)	Output
2	Clear to Send (CTS)	Input
3	Data Set Ready (DSR)	Input
4	Receive Data (RCV)	Input
5	Signal Ground (GND)	NA
6	Request to Send (RTS)	Output
7	Data Terminal Ready (DTR)	Output
8	Data Carrier Detect (DCD)	Input

Regulatory Compliance

The 4H4282-49, 4H4283-49, 4H4203-72, 4H4202-72, 4H4284-49, and 7G-6MGBIC meet the safety and electromagnetic compatibility (EMC) requirements listed in [Table A-14](#):

Table A-14 Compliance Standards

Regulatory Compliance	Standards
Safety	UL 60950, CSA C22.2 No. 60950, 73/23/EEC, EN 60950, and IEC 60950. The modules that support laser connections also meet the EN 60825 and 21 CFR 1040.10 standards.
Electromagnetic Compatibility (EMC)	47 CFR Parts 2 an 15, CSA C108.8, 89/336/EEC, EN 55022, EN 61000-3-2, EN 61000-3-3, EN 55024, AS/NZS CISPR 22, and VCCI V-3.

Mode Switch Bank Settings and Optional Installations

This appendix covers the following items:

- [Required Tools](#) (page B-1)
- [Setting the Mode Switches](#) (page B-2)
- [Memory Locations and Replacement Procedures](#) (page B-5)

Required Tools

Use the following tools to perform the procedures provided in this appendix:

- Antistatic wrist strap
- Phillips screwdriver



Caution: An antistatic wrist strap is required to perform the procedures in this appendix. Use the antistatic wrist strap when performing any of the procedures in this appendix to minimize ESD damage to the devices involved.

Setting the Mode Switches



Caution: Read the appropriate sections to be fully aware of the consequences when changing switch settings.

Only qualified personnel should change switch settings.

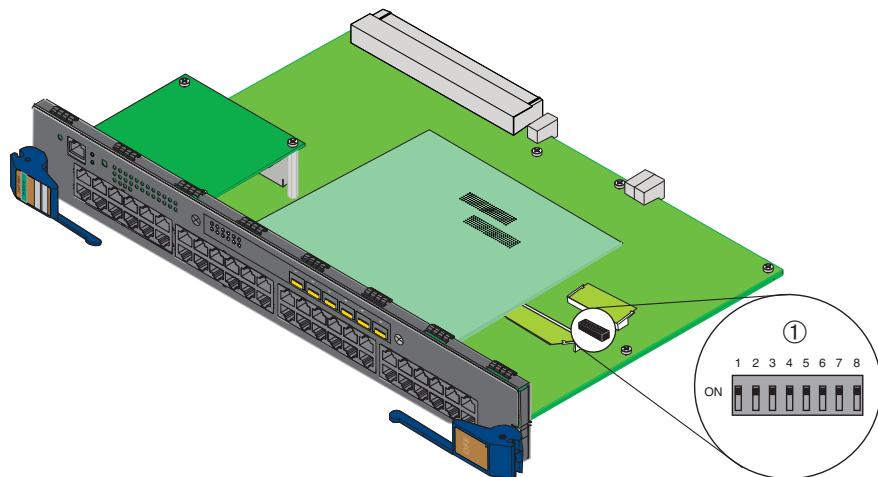
[Figure B-1](#) and [Figure B-2](#) show the location of the mode switches and the switch settings for normal operation. These switches are set at the factory to the off position and rarely need to be changed.

Switch definitions and positions are as follows:

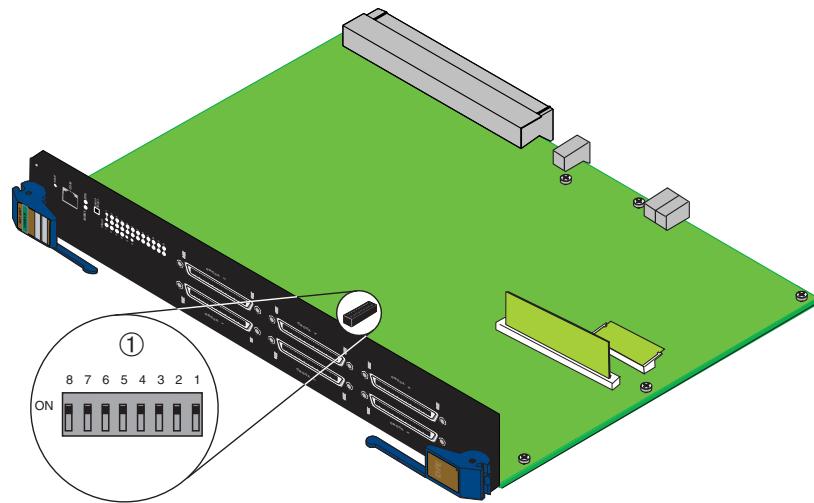
- Switches 1 through 6 – For Enterasys Networks use only.
- Switch 7 – Clear Persistent Data. Changing the position of this switch clears Persistent Data on the next power-up of the module. All user-entered parameters, such as the IP address, module names, etc., are reset to the factory default settings. Once the module resets, you can either use the factory default settings or reenter your own parameters.
- Switch 8 – Clear Admin Password. Changing the position of this switch clears the admin password, and restores the factory default password on the next power-up of the module. Once the module resets, you can either use the factory default settings or reenter your own password.



Note: Do not change the position of Switch 8 unless it is necessary to reset the admin password to its factory default setting.

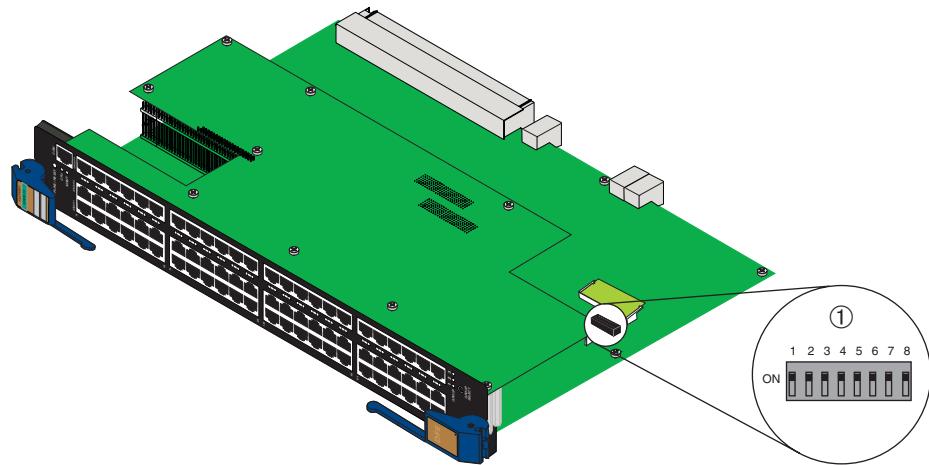
Figure B-1 Mode Switch Location on 4H4282-49 and 4H4283-49

1 Mode switch bank (located in same location on both the 4H4282-49 and 4H4283-49)

Figure B-2 Mode Switch Location on 4H4203-72

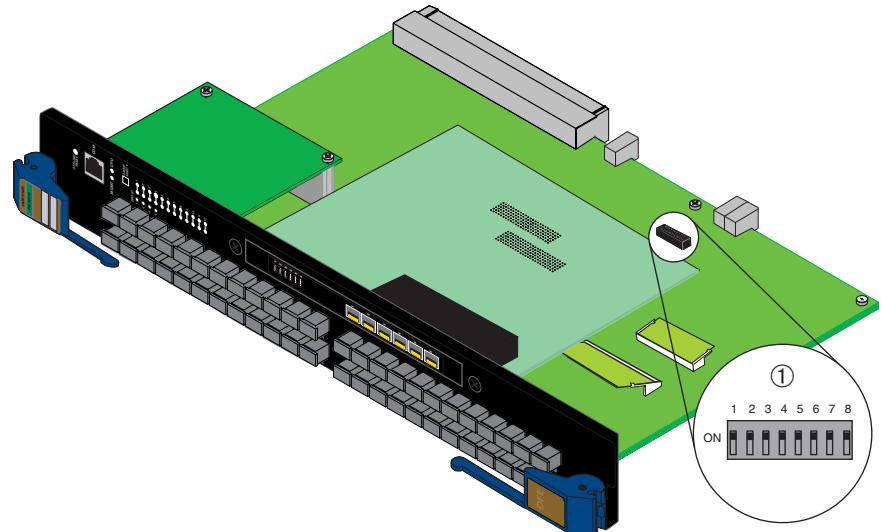
1 Mode switch bank

Figure B-3 Mode Switch Location on 4H4202-72



1 Mode switch bank

Figure B-4 Mode Switch Location on 4H4284-49



1 Mode switch bank

Memory Locations and Replacement Procedures

In the event that the Dual In-line Memory Module (DIMM) or DRAM Single In-line Memory Module (SIMM) (FLASH memory) needs to be replaced, the following sections describe how to access, locate and replace these memory modules.



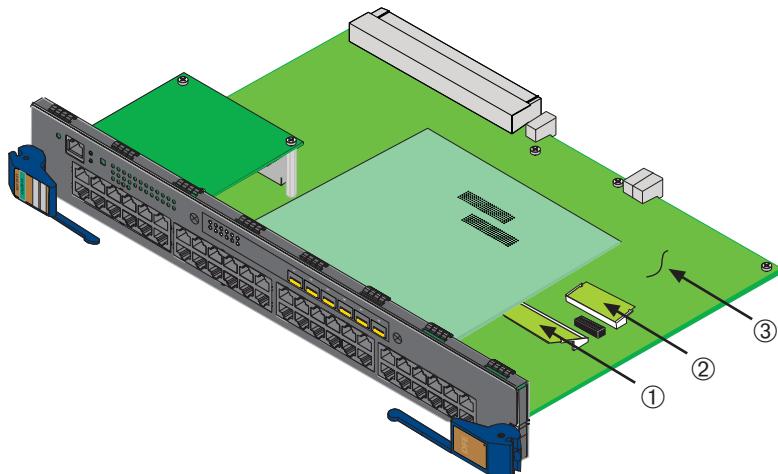
Caution: Because of the complexity of correctly replacing the large daughter board on the 4H4202-72, there is no procedure in this manual for replacing the DIMM on a 4H4202-72. Contact Enterasys Networks support or nearest representative if you need to replace the DIMM.

If you have questions concerning the replacement of either memory module, refer to the section, "[Getting Help,](#)" on page 1-10 for details on how to contact Enterasys Networks.

Location of DIMM and DRAM SIMM Memory Modules

[Figure B-5](#) and [Figure B-6](#) show the locations of the DIMM and DRAM SIMM on each main board. Although 4H4282-49 is shown in [Figure B-5](#), the approximate location also applies to the 4H4283-49 and 4H4284-49. [Figure B-6](#) shows the approximate locations on the 4H4203-72, and [Figure B-7](#) shows the approximate locations on the 4H4202-72.

Figure B-5 DIMM and DRAM SIMM Locations (for 4H4282-49, 4H4283-49, and 4H4284-49)

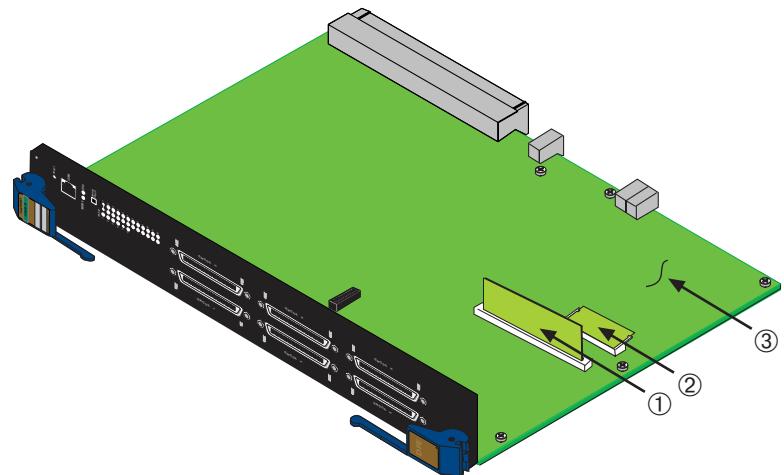


1 DIMM

2 DRAM SIMM

3 Main PC board (4H4282-49 is shown)

Figure B-6 DIMM and DRAM SIMM Locations (4H4203-72)

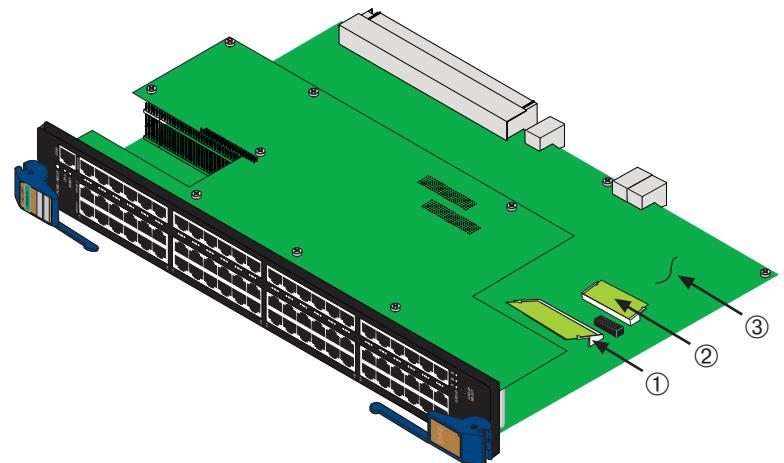


1 DIMM

2 DRAM SIMM

3 Main PC board

Figure B-7 DIMM and DRAM SIMM Locations (4H4202-72)



1 DIMM

2 DRAM SIMM

3 Main PC board

DIMM Replacement Procedure (4H4282-49 and 4H4283-49)



Caution: Observe all antistatic precautions when handling sensitive electronic equipment.

To remove and replace the DIMM on the 4H4282-49 or 4H4283-49, refer to [Figure B-8](#) and [Figure B-9](#) respectively, and proceed as follows:

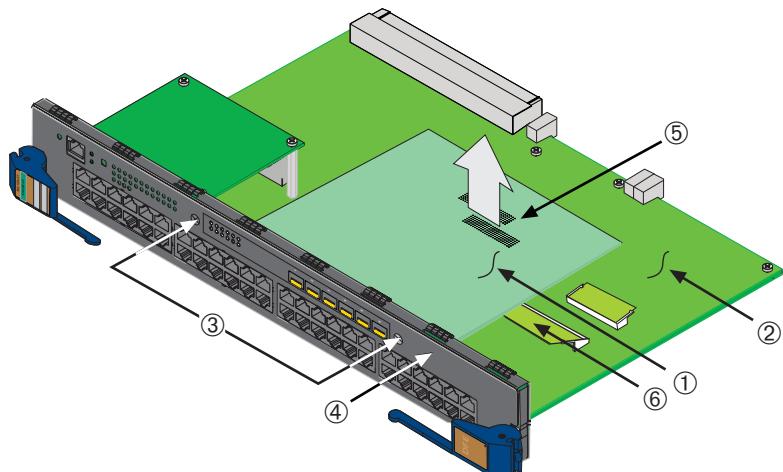
Removing the DIMM



Note: Prior to removing the DIMM in a 4H4282-49 or 4H4283-49, you must remove the Ethernet interface module to gain access to the DIMM memory and connector.

1. If there is an optional interface module installed on the main board of the 4H4282-49 or 4H4283-49, proceed to step 1a. Otherwise proceed to step 2.
 - a. Remove and save the three screws attaching the Ethernet interface module to the standoff on the main board and front panel.
 - b. Lift the interface module straight up and off the two module connectors on the main PC board.

Figure B-8 Ethernet Interface Removal and DIMM Connector Location (4H4282-49 and 4H4283-49)



1 Ethernet interface module (not on all modules)

2 Main PC board (4H4282-49 is shown)

3 Screws (3)

4 Module front panel

5 Module connectors on main board

6 DIMM memory module

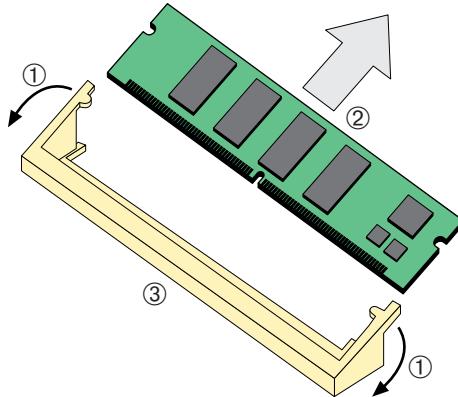
2. Refer to [Figure B-9](#). Push the connector arms away from the memory module to release it from the connector.



Note: The ejector arms on this connector are not spring loaded, so they will remain in the open position until manually closed.

3. Remove the module from the connector.

Figure B-9 Removing the Existing DIMM from 4H4282-49 or 4H4283-49



1 Connector arms

2 Memory module

3 Connector

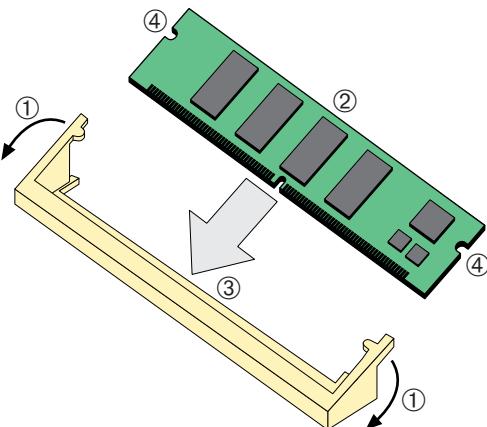
Installing the DIMM on 4H4282-49 or 4H4283-49



Caution: Observe all antistatic precautions when handling sensitive electronic equipment.

To install the memory module, refer to [Figure B-10](#) and proceed as follows:

1. With the connector arms set in the open position, insert the memory module between the connector fingers and push the memory module into the connector until the tabs on the two connector arms pull in towards the DIMM alignment notches.
2. Push the DIMM further into the connector until the two DIMM alignment notches and the tabs on the two connector arms lock the DIMM into place.

Figure B-10 Installing the DIMM on 4H4282-49 or 4H4283-49

1 Connector arms

2 DIMM memory module

3 Connector

4 DIMM alignment notches (2)

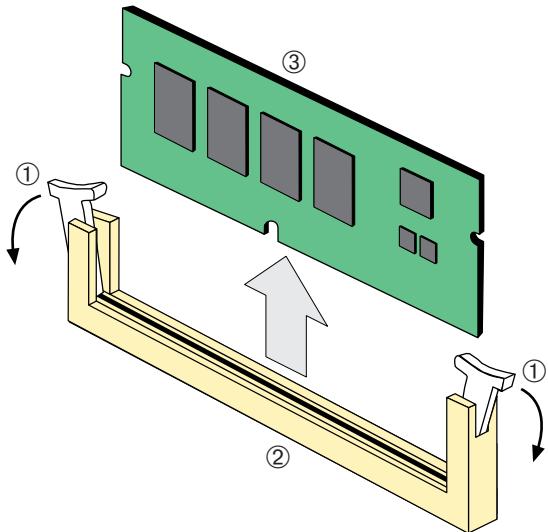
Removing the DIMM from 4H4203-72



Caution: Observe all antistatic precautions when handling sensitive electronic equipment.

To remove the existing DIMM, proceed as follows:

1. Locate the DIMM connector on the main PC board. Refer back to [Figure B-6](#).
2. Push the connector arms away from the DIMM, as shown in [Figure B-11](#), enough to release the DIMM from the connector.

Figure B-11 Removing Existing DIMM from 4H4203-72

1 Connector arms**2** DIMM**3** Connector

3. Pull the DIMM straight up and remove it from the connector.

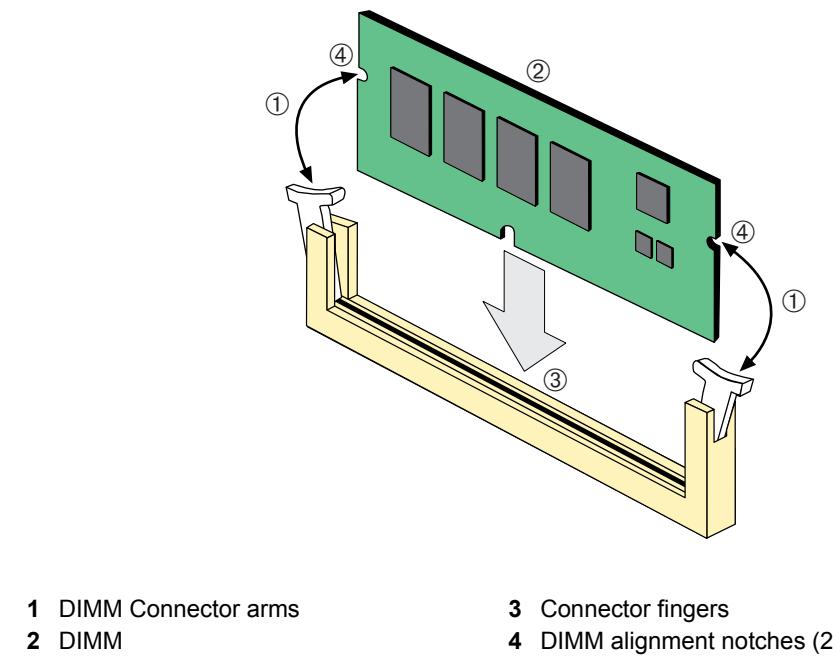
Installing the DIMM on 4H4203-72



Caution: Observe all antistatic precautions when handling sensitive electronic equipment.

To install a DIMM, refer to [Figure B-12](#) and proceed as follows:

1. Push the connector arms away from the DIMM enough to insert the DIMM into the connector fingers.
2. Insert the DIMM straight down between the connector fingers enough for the tabs on the connector arms to align with the two DIMM alignment notches.
3. Push the DIMM down into the connector fingers. Then rotate the two connector arms toward the DIMM to lock it into place.

Figure B-12 Installing the DIMM on 4H4203-72

DIMM Replacement (4H4202-72)



Note: Because of the complexity of correctly replacing the large daughter board on the 4H4202-72, it is recommended that you contact Enterasys Networks support or nearest representative if you need to replace the DIMM.

DRAM SIMM Replacement Procedure (All DFE Modules)

In the event that the DRAM Single In-line Memory Module (SIMM) needs to be replaced, the following sections explain how to remove and install the SIMM. If you have questions concerning the replacement of the SIMM, refer to the section, “[Getting Help](#),” on page 1-10 for details on how to contact Enterasys Networks.

Removing the DRAM SIMM

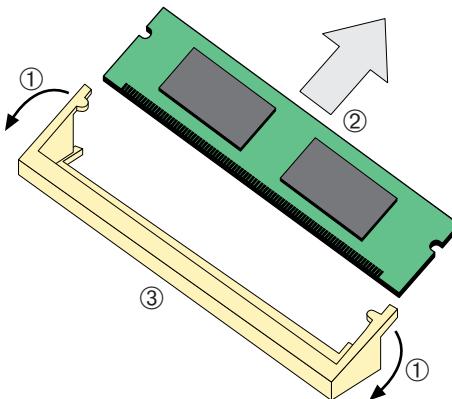


Caution: Observe all antistatic precautions when handling sensitive electronic equipment.

To remove the existing DRAM SIMM, proceed as follows:

1. Locate the DRAM SIMM connector on the main PC board. Refer back to [Figure B-5](#) for the DRAM SIMM location on either the 4H4282-49 or 4H4283-49. Refer back to [Figure B-6](#) for the location on the 4H4203-72.
2. Push the connector arms away from the DRAM SIMM, as shown in [Figure B-13](#), and simultaneously lift the DRAM SIMM enough to release it from the connector fingers.

Figure B-13 Removing the Existing DRAM SIMM



1 Connector arms

2 DRAM SIMM

3 Connector fingers

3. Rotate the DRAM SIMM upwards, then remove it from the connector fingers.

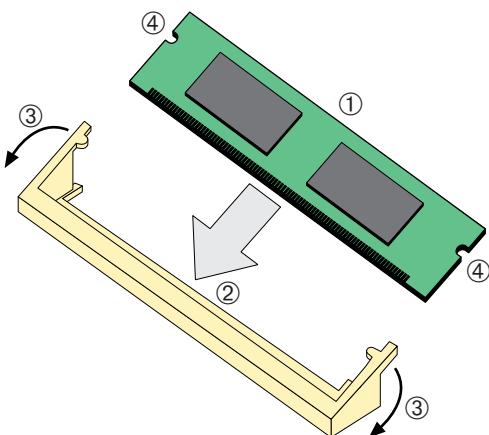
Installing the DRAM SIMM



Caution: Observe all antistatic precautions when handling sensitive electronic equipment.

To install a DRAM SIMM, refer to [Figure B-14](#) and proceed as follows:

1. Insert the DRAM SIMM down between the connector fingers.
2. Pivot the DRAM SIMM downward so the tabs on the connector arms align with the two DRAM SIMM alignment notches. With the two connector arms spread outward, push the DRAM SIMM down between the connector arms. Then release the two connector arms to lock the DRAM SIMM into place.

Figure B-14 Installing the DRAM SIMM

1 DRAM SIMM

2 Connector fingers

3 Connector arms

4 DRAM SIMM alignment notches (2)

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